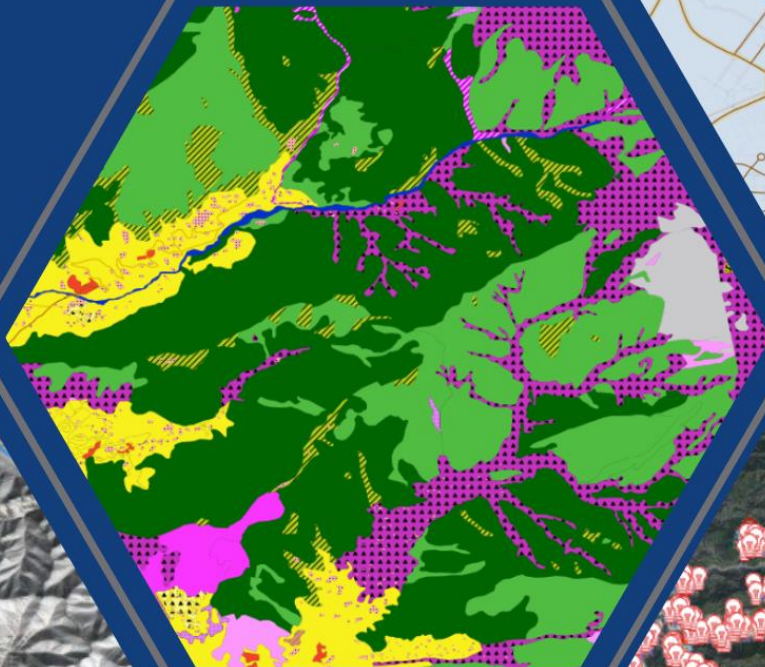# USER MANUAL FOR BHUVAN PANCHAYAT PORTAL

SPACE BASED INFORMATION SUPPORT FOR DECENTRALISED PLANNING (SISDP)

Regional Centres

National Remote Sensing Centre
Indian Space Research Organisation
Dept. of Space, Govt. of India
Hyderabad.

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15	Abstract This user manual provides comprehensive guidance for navigating and utilizing the Bhuvan Panchayat Portal. Users will find detailed, step-by-step instructions on how to effectively utilize the portal's features and functionalities. This document aims to simplify and enhance the user experience and assist users in unlocking the full potential of the Bhuvan Panchayat portal. Key Terms: Bhuvan Panchayat ,Web portal, User manual, GIS ,Decentralised planning				

TABLE OF CONTENTS

1. INTRODUCTION

Bhuvan Panchayat portal is specifically designed to provide information and tools for utilisation on all the products and services developed under the National Natural Resources Management System (NNRMS) project called Space-based Information System for Decentralised Planning (SISDP). With an aim to support the geospatial data requirements for entire country at a large scale of 1:10k thematic products like LULC, Drainage, Settlements, Slope, Rail & Road along with collateral data and high resolution satellite imagery base of 2.5m, the project has successfully completed two phases i.e. SISDP and SISDP-U by generating and disseminating generated datasets on Bhuvan Panchayat portal. With the support of experts from state Partner Institutions, academia, NESAC and Regional Centres of NRSC, ISRO, the project could achieve these objectives.

Bhuvan Panchayat presents a comprehensive information on the project, its activities, facilities to download the data directly as a shape file or use the data as OGC WMS/WMTS services thus facilitating all the users of different geospatial domains to integrate the data directly in their value added services or showcase as mashups / overlays in their existing value chains. A pan India seamless coverage of thematic data at this large scale of 1:10k scale is made available to support growing needs of g-governance, societal applications, R&D activities in environment and land use studies and geospatial industry needs at absolutely no cost along with free access based on the governing policies as on date.

This manual provides all information required for operational use of data and services along with visualisation and analysis / reports based on the datasets generated under SISDP project.
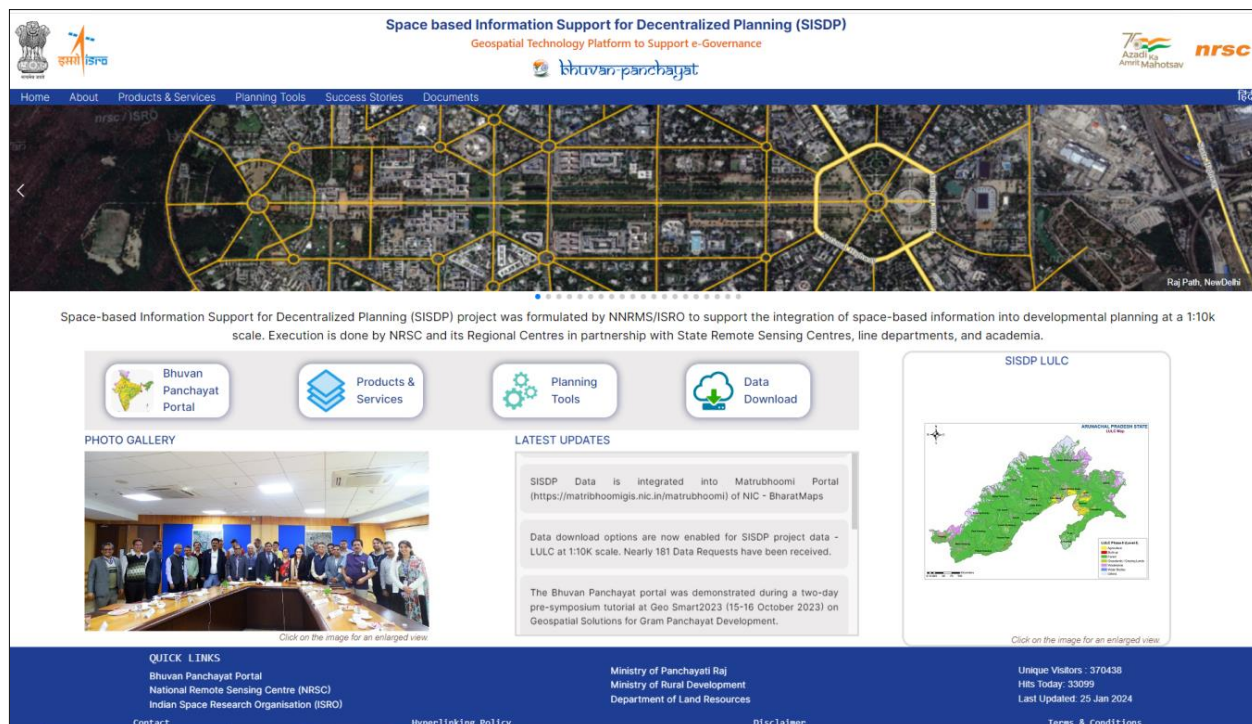
Detailed information and utilities are available on https:\\bhuvanpanchayat.nrsc.gov.in

Figure 1. Snapshot of home page / landing page of Bhuvan Panchyat portal

2. NAVIGATING THE PORTAL

2.1 Navigation Bar

The navigation bar serves as your gateway to different sections of the SISDP Portal, providing a user-friendly way to explore its diverse features and information. It consists of six menu options (Figure 2), each uniquely designed to cater to specific aspects of the portal. By clicking on a menu item, users can effortlessly navigate to the corresponding section of the webpage. Here's a brief overview of each menu option:

Figure 2. Navigation bar

- **Home:**
  Clicking on the "Home" menu item will lead you to the main landing page. Here, you'll find an image slider showcasing essential data products, quick link cards for easy access to key sections, a photo gallery capturing recent events, the latest updates on the project, and an Atlas section featuring thematic maps.

- **About:**
  Click on "About" to gain a deeper understanding of the SISDP project, covering its goals, objectives, project team members, focal points, and partner institutions.

- **Products & Services:**
  Click on Product & Services to explore thematic data products. Additionally, find a link to the Data Download to download specific datasets. This section also features a QGIS WMS link icon, allowing users to connect to the SISDP WMS link in QGIS.

- **Planning Tools:**
  The "Planning Tools" section introduces two essential tools: the Land Resources Development Plan Tool and the Water Resources Development Plan Tool. Click on this menu item to discover how these tools facilitate effective planning at the local level.

- **Success Stories:**
  Click on "Success Stories" to access case studies and learn about the positive impact of the project on various initiatives. This section showcases successful projects that leveraged SISDP data.

- **Documents:**
  Click on "Documents" to access Help manuals and the SISDP Project Atlas. Help Manual documents are uploaded to assist users in navigating the portal. The Atlas section provides a visual narrative of the SISDP project through our dedicated Atlas. Thematic maps and snapshots in the atlas offer a visual representation of the geographical dynamics of the SISDP project.

- **Hindi:**
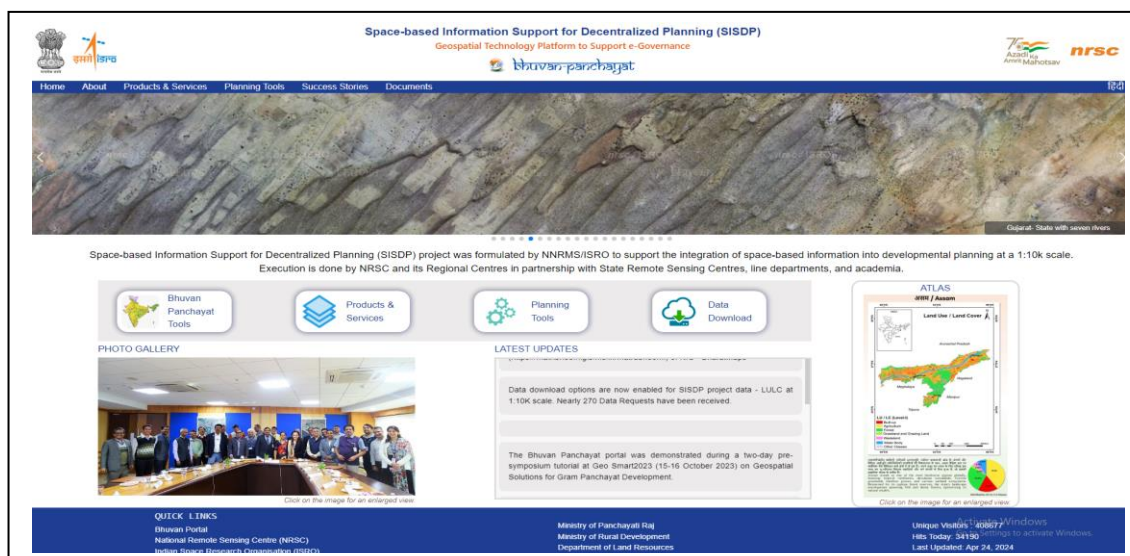 Click on the "Hindi" tab to access the Hindi version of the Bhuvan Panchayat portal (figure 3)

Figure 3. Hindi version of Bhuvan Panchayat

2.2 Quick link cards

The Quick Link Cards section consists of four cards (Figure 4) for the ease of user access:

- **Card 1 : Bhuvan Panchayat portal**
  This card seamlessly integrates with the Bhuvan Panchayat Geoportal, enabling users to explore and analyze a wide range of geospatial information, maps, and tools for effective planning.
- **Card 2: Products & Services**
  The second card directs users to the Data Products and Services section, providing a quick overview of SISDP products.
- **Card 3: Planning tools**
  The third card takes users to the Planning Tools section of the SISDP webpage.
- **Card 4: Data Download**
  This card allows users to visit the Data Download portal directly. By using their Bhuvan login credentials, users can download data directly.
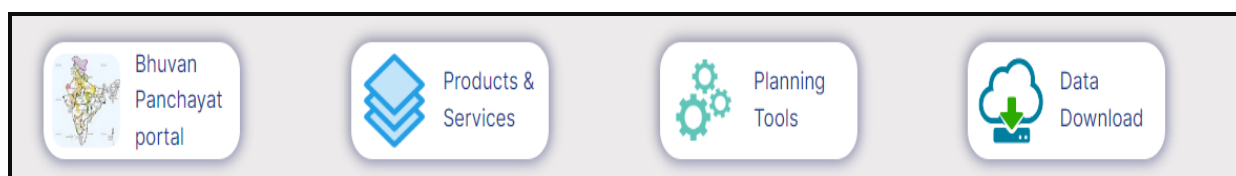
Figure 4. Quick link cards

These quick link cards are designed to streamline user navigation, providing convenient shortcuts to key sections of the SISDP Portal.

3. SECTIONS IN BHUVAN PANCHYAT PORTAL

3.1 Home Page / Landing Page

- **Image Slider:** The dynamic image slider showcases the diverse data products of the SISDP project. Simply slide through captivating visuals, to see SISDP project's data products.
- **Quick Link Cards:** Utilize our user-friendly Quick Link Cards for swift access to essential information. Each card serves as a direct link to a specific section, ensuring you navigate with ease.
- **Photo Gallery:** Immerse yourself in the vibrancy of different project events with captivating Photo Gallery. Gain a visual perspective on ongoing activities and achievements. Each image tells a story of the SISDP project's dynamic journey.
- **Latest Updates:** Stay current with the SISDP project's progress through the Latest Updates section. Here, you'll find news and developments that keep you informed about the project's recent activities.
- **Map Slider:** Delve into the thematic maps of the SISDP project within our dedicated Atlas Section. Here, you can explore geospatial insights and gain a comprehensive understanding of the thematic data in the SISDP project. Click on the map image to view in full resolution.
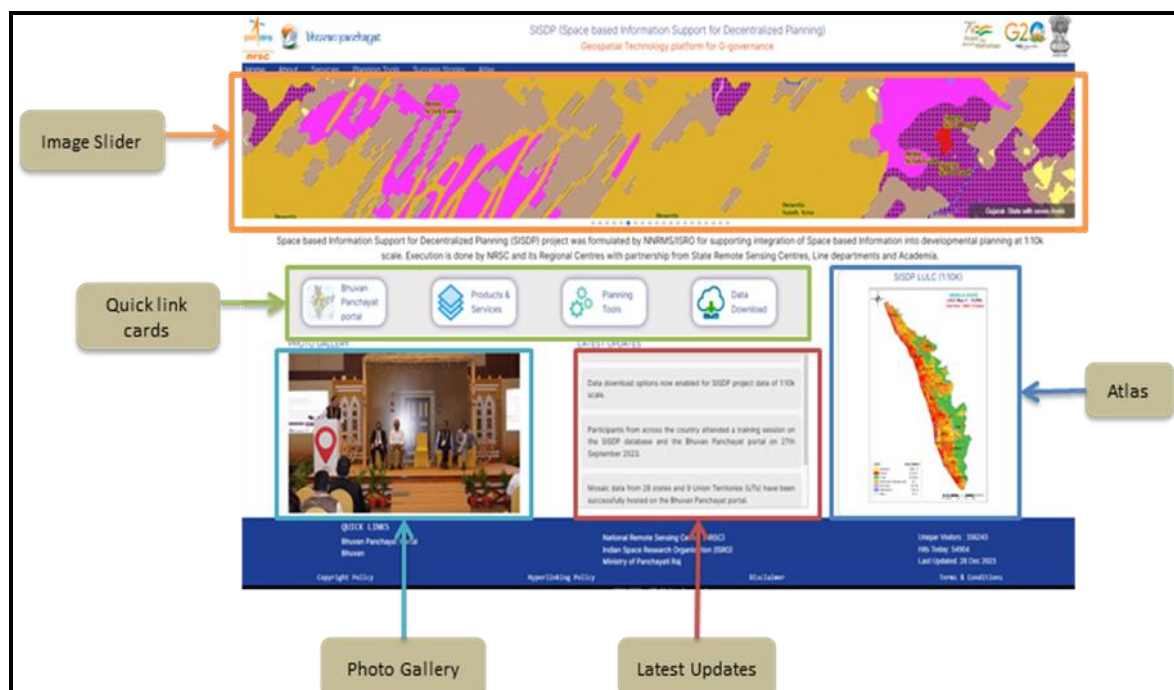
Figure 5. Sections in Bhuvan Panchayat Portal's Landing Page

3.2 About

- **Project Overview:** This section provides an in-depth overview of the project's mission and how it contributes to decentralised planning. As per (Figure 6).
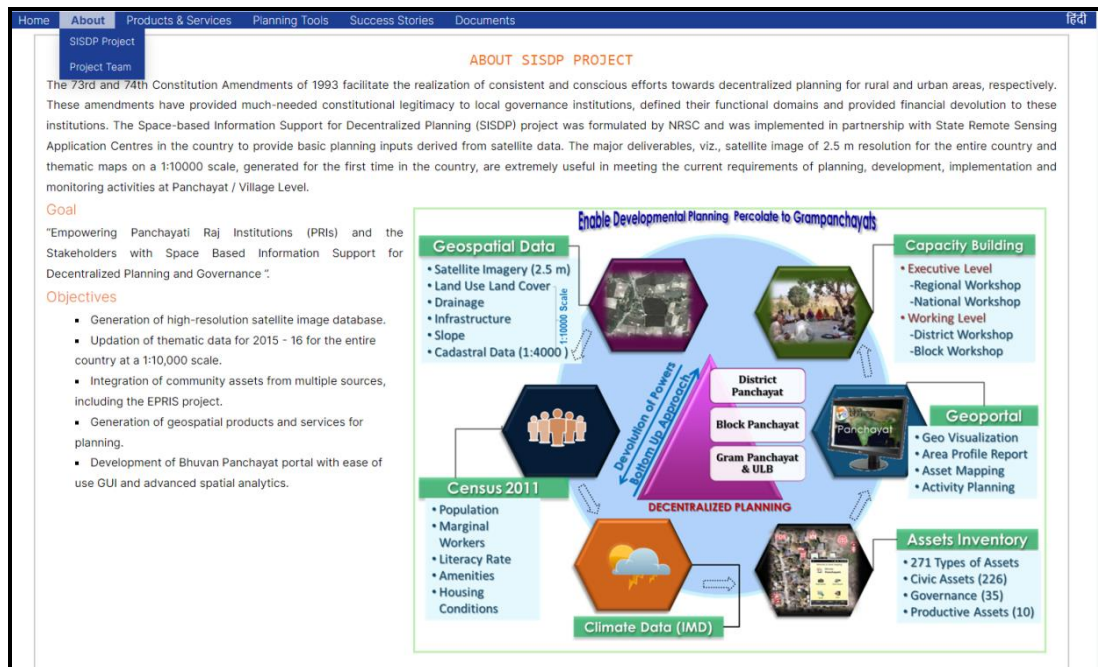

Figure 6. SISDP project overview tab

- **Project Team:** Meet the dedicated individuals powering the SISDP project (Figure 7).
- **Focal Points:** Gain insights into the key focal points that drive the SISDP project.
- **Partner Institutions:** Explore our collaborative network of partner institutions that played a crucial role in preparing the thematic datasets of the SISDP project.

Figure 7. Project Team Tab

3.3 Products & Services

- **Data Products:** This section provides information on various geospatial data products of SISDP project, including Land Use and Land Cover (LULC), Drainage, Infrastructure and Settlements. Refer to Figure 8 for a visual representation.

- **Data Download Portal:** A link to Data Download Portal is provided in this section for users to download specific datasets from SISDP Phase II Thematic datasets. Simply click on the provided link to access and download the data you need for planning, research and governance activities. Detailed steps for downloading data are outlined in Section 4.1.
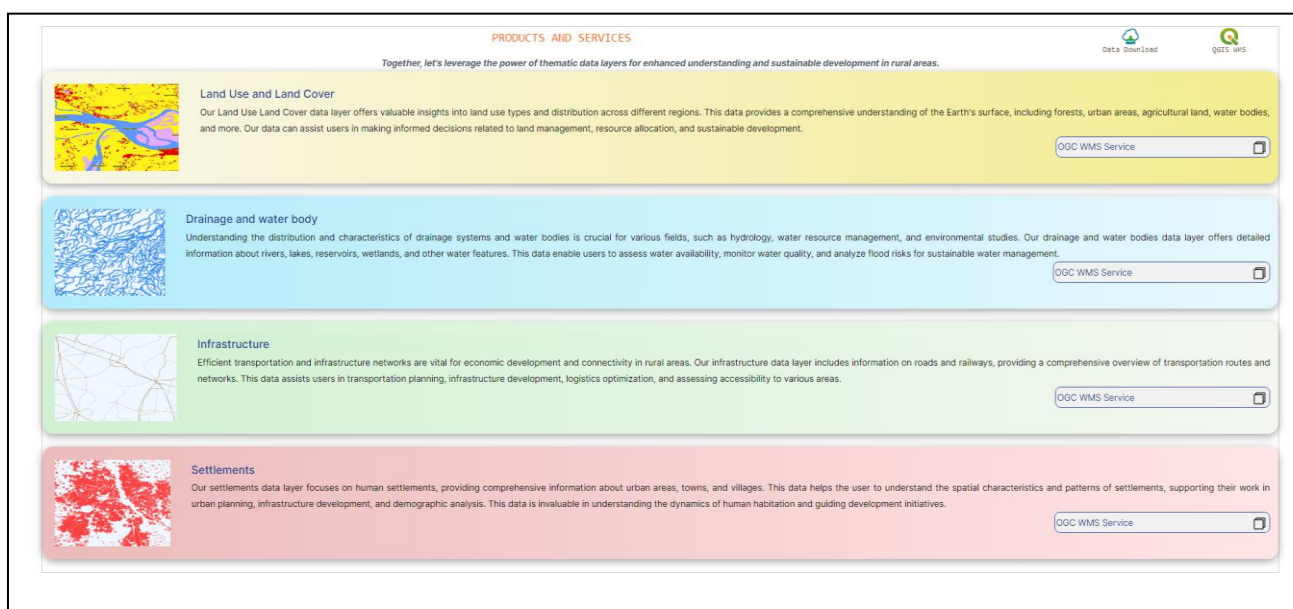
Figure 8. Products & Services section

- **WMS Services:** Discover the Web Map Service (WMS) provided by SISDP for all thematic layers. Users can seamlessly integrate the WMS link into their projects, ensuring access to geospatial data. Additionally, a QGIS WMS link is available for users to visualize SISDP geospatial data directly within the QGIS software. Find the procedure to connect WMS in QGIS in Section 4.2.

3.4 Planning Tools

Explore the "Planning Tools" section to gain valuable insights into three essential tools (Figure 9) integrated into the Bhuvan Panchayat Portal: the Land Resources Development Plan (LRDP) Tool, Water Resources Development Plan (WRDP) Tool, and Amenities planning tool. These planning tools are designed to empower users in the effective planning and management of land and water resources and different amenities local level.
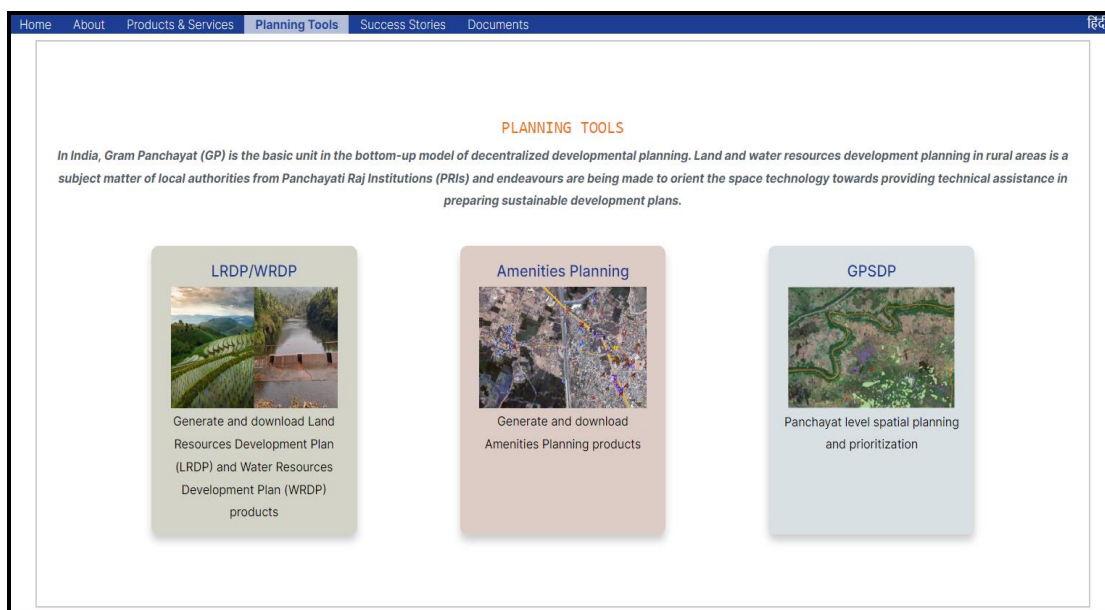
Figure 9. Planning Tools Section

In Planning Tools section, there are three cards- LRDP/WRDP, Amenities Planning and GPSDP.

- **LRDP/WRDP:** Click on this card to navigate to the LRDP/WRDP Tools webpage, where users can generate and download Land Resources Development Plan (LRDP) and Water Resources Development Plan (WRDP) products. The help manual for using this portal is available in the Documents section of the SISDP portal.
- **Amenities Planning:** Click on this card to plan Amenities and download Profile report for a Panchayat (Figure 10). The help manual for using Amenities Planning portal is available in the Documents section of the SISDP portal.
- **GPSDP**: Click on GPSDP card to navigate to Gram Panchayat Spatial Development Planning (GPSDP) portal, (Figure 11). Utilizing data gathered from household surveys conducted across 34 Gram Panchayats (GPs), the portal offers a robust foundation for informed decision-making in community development.
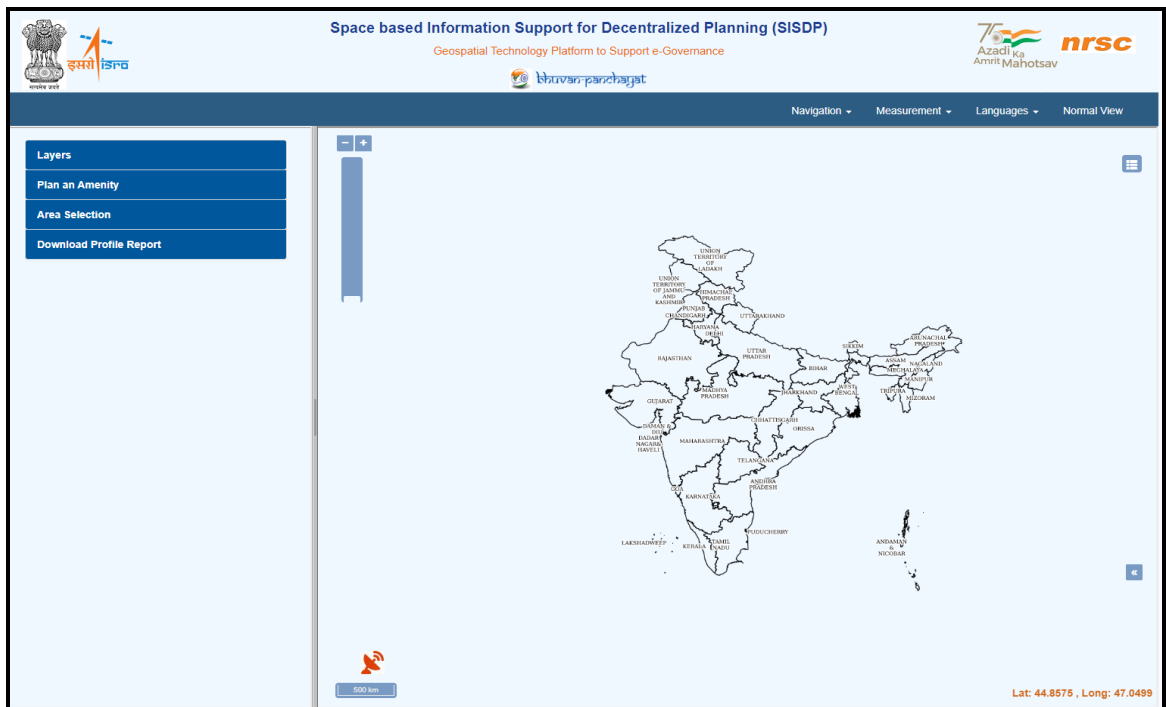
Figure 10. Amenities Planning
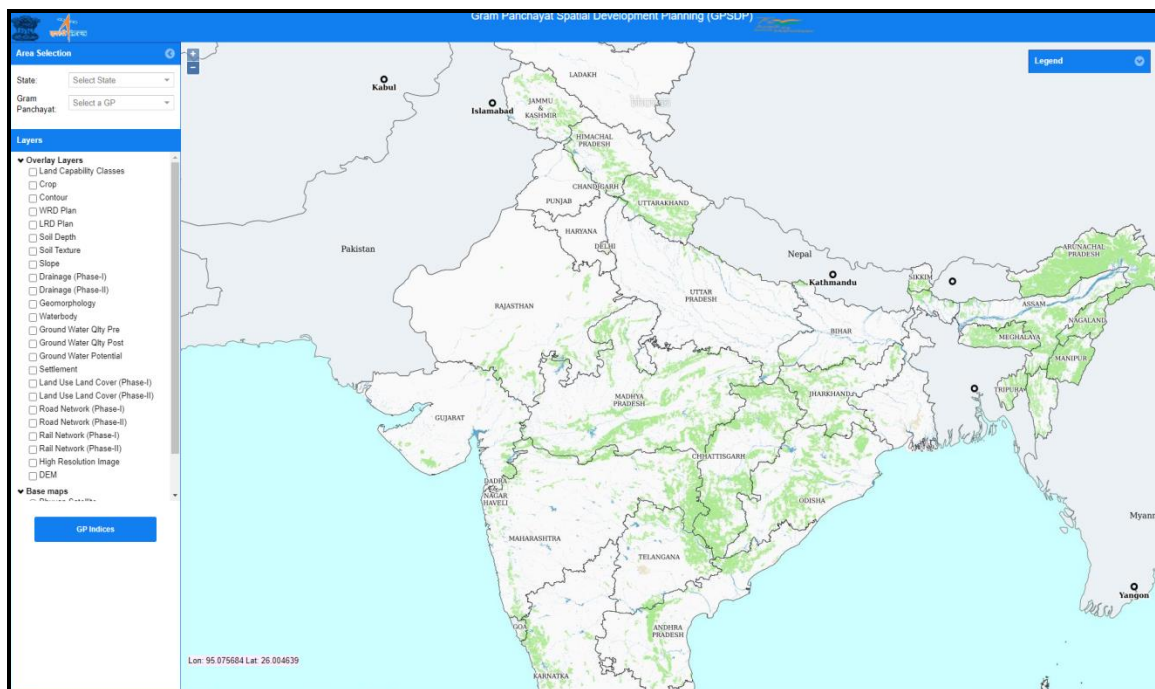
Figure 11. Gram Panchyat Spatial Devlopment Planning (GPSDP) portal

3.5 Success Stories

In the "Success Stories" section, we showcase select projects that have leveraged SISDP data and planning tools for resource management and spatial planning activities (figure 12). These success stories provide real-world examples of how the geospatial insights have made a positive impact on various initiatives. Click on "Read more" buttons to read more about a particular case study. Use "Click here for more Information" button to know more on SISDP data users.
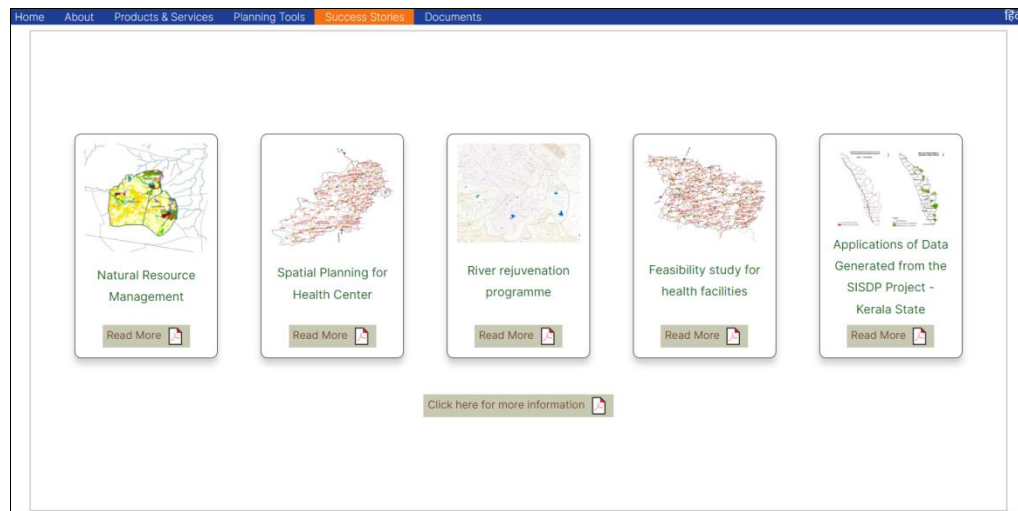
Figure 12. Success Stories section

3.6 Documents

Navigate through the Documents section (figure 13) to access Help manuals for each portal under the SISDP project. This section also showcases the SISDP project atlas, where thematic maps and snapshots provide a vivid representation of the geographical dynamics.
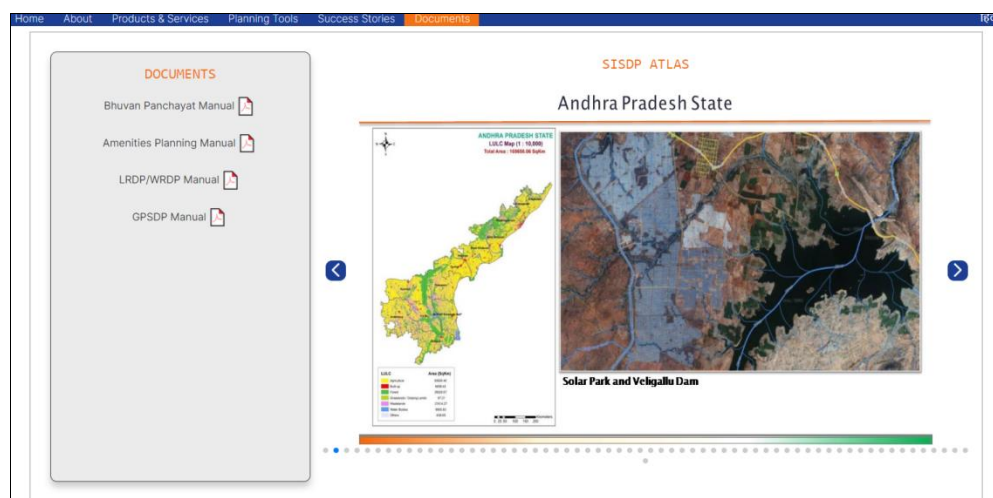
Figure 13. Documents section

4. DATA DOWNLOAD

Follow the steps below to download SISDP Phase-II thematic data in shapefile format using "Bhuvan " login credentials.

1. Click "Data Download" card (Highlighted in Figure 14) on the SISDP Homepage (https://bhuvanpanchayat.nrsc.gov.in). Another way to navigate to the data download dashboard is by clicking on the "Data Download" button in the products & Services section. In either case, users can access the SISDP data download dashboard.

Figure 14. Data download Quick link

2. Bhuvan Single Sign on Page appears. Login to the data download portal using Bhuvan login credentials. If user doesn't have an account on Bhuvan, they can create a new account and then login to the portal. On successful login, the Data download dashboard appears (Figure 15).
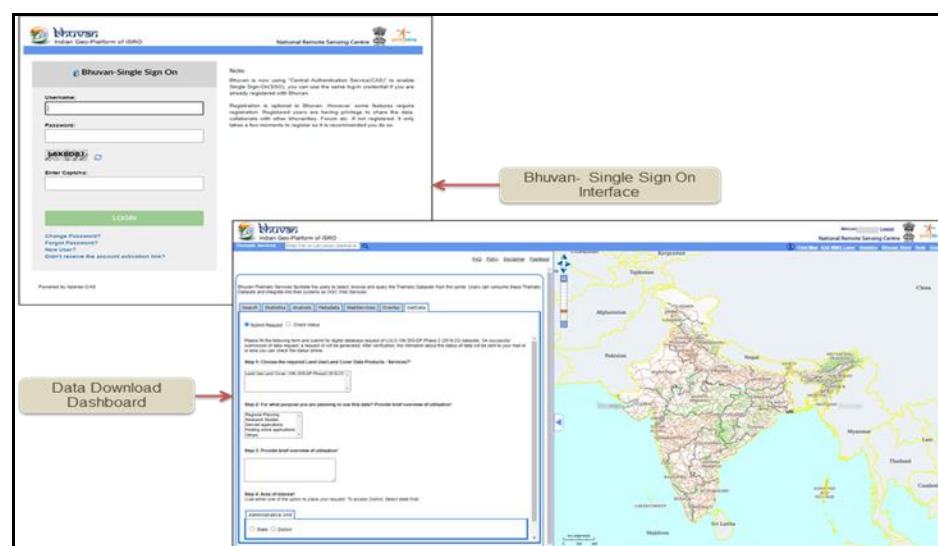
Figure 15. Snapshots of Bhuvan sign-on interface and Data download page

3. Navigate to GetData section, fill in the required data, select the Area of Interest and click Submit. Figure 16 shows a sample input for downloading data.

Figure 16. GetData section

4. Once the request is submitted, a Request ID is generated (Figure 17). Click on the Check Status button to know the status of the request using the request ID (Figure 18).

Figure 17. Request ID generation

Figure 18. Status of the request

5. Once data is ready for download, you will receive an email as shown in Figure 19. Click on the link in the mail and data download will start.
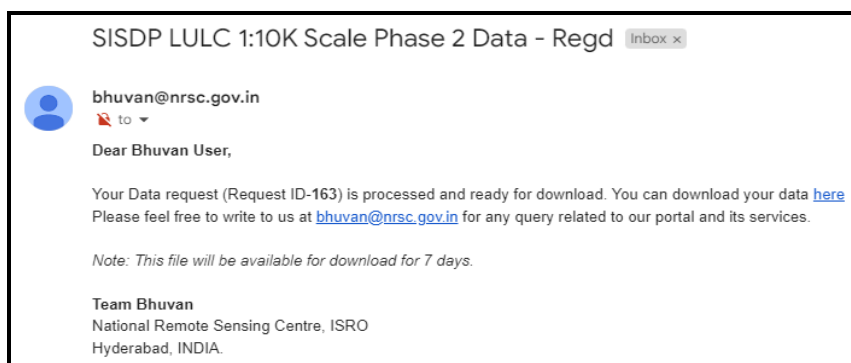
Figure 19. Data Download email

5. USING WMS SERVICE

1. In the SISDP Homepage, navigate to the Product & Services section and click on "QGIS WMS" link button, highlighted in Figure 20. WMS link is copied to clipboard and a popup appears.

Figure 20. QGIS WMS link

2. Open QGIS and navigate to the Data source Manager. Select WMS/WMTS option and click New (shown in Figure 21) to create a new WMS connection.
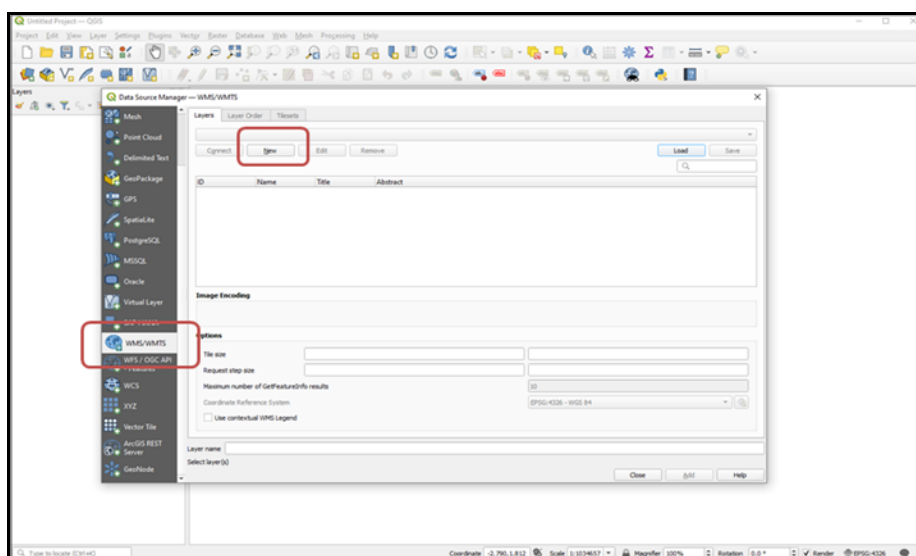

Figure 21 Data Source Manager in QGIS

3. Provide a name for the connection and paste the copied URL (Figure 22). Click OK.
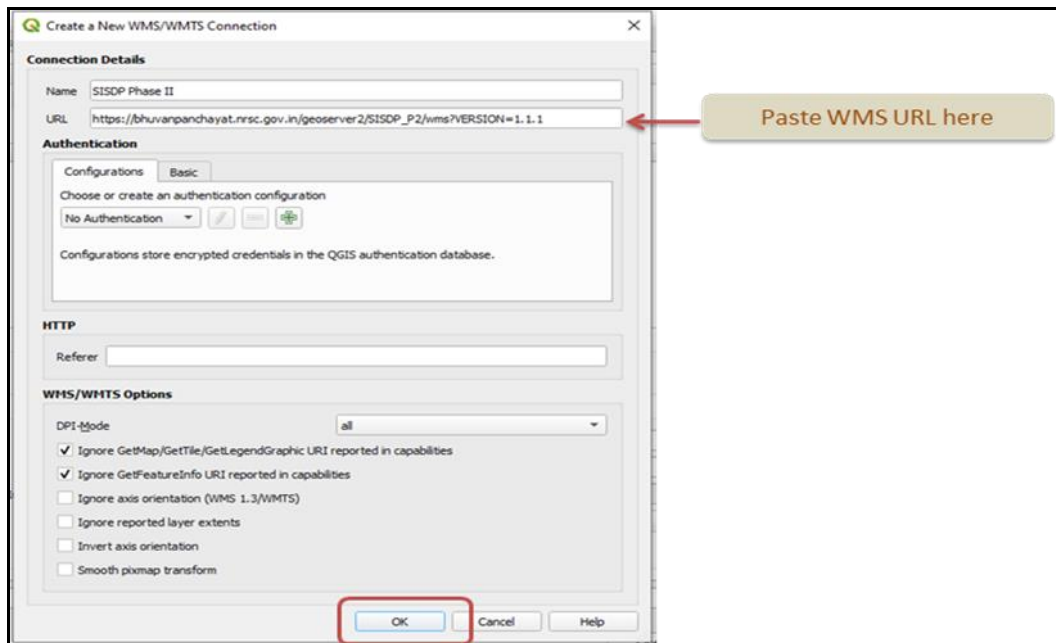
4. Click Connect and a list of WMS layers from SISDP Phase II appears. Select the desired layer and click add as shown in Figure 23.
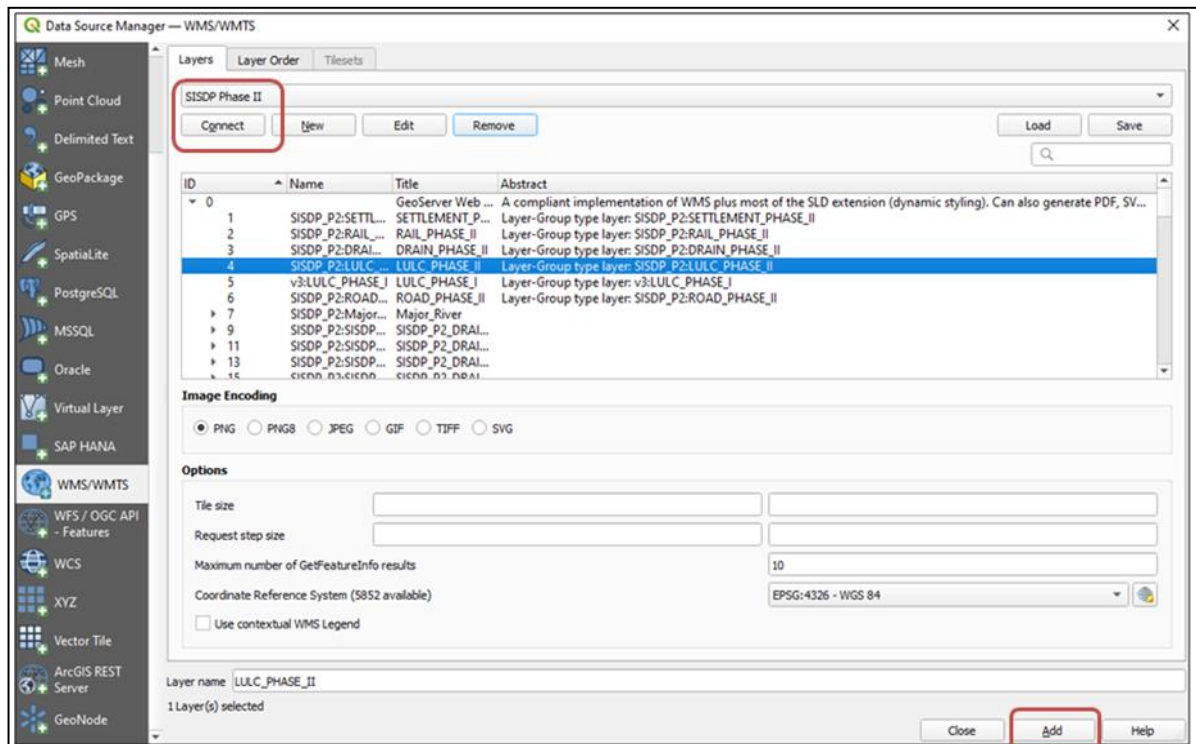

Figure 23 SISDP WMS connection

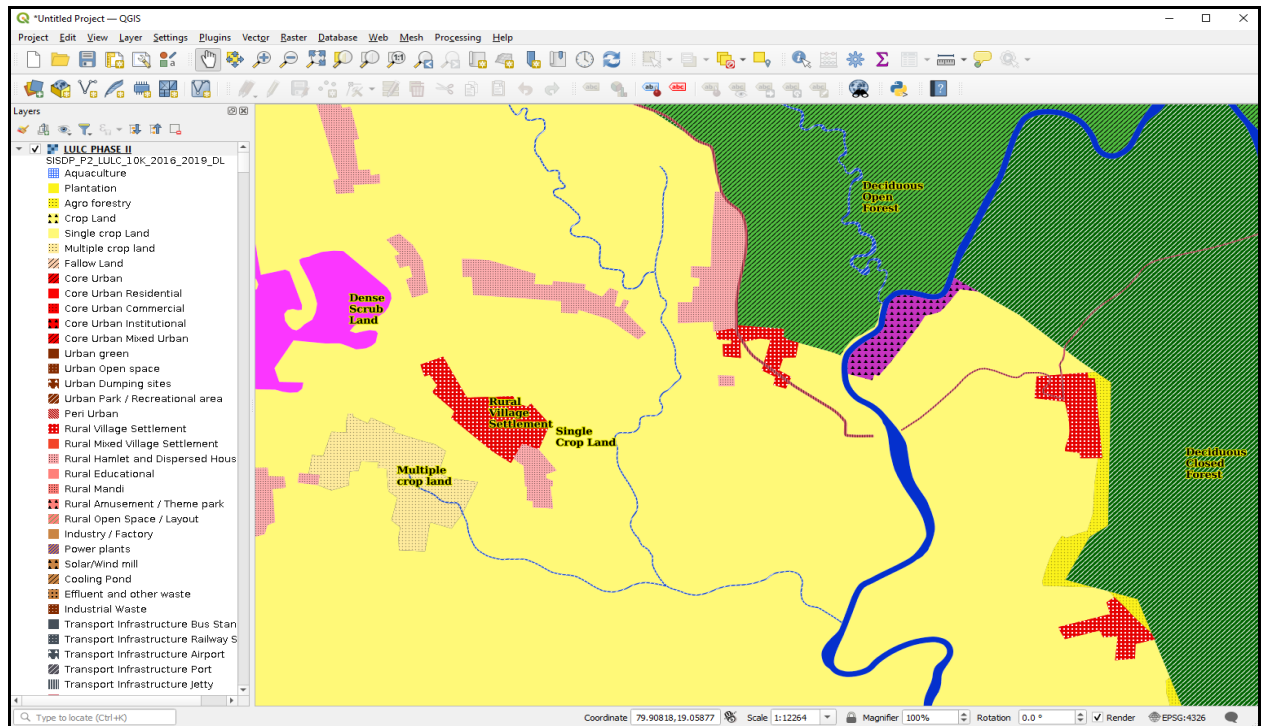5. Selected WMS layer is added to QGIS Map pane as shown in Figure 24.

Figure 24. SISDP WMS data loaded in QGIS

6. KEY FEATURES OF BHUVAN PANCHAYAT PORTAL

6.1 Geo-Visualisation

It refers to the use of visual elements and techniques to represent and communicate information related to geographic or spatial data. It involves the creation of visual representations of data that have a spatial component, such as maps, charts, graphs, and other graphical displays. Geospatial data, which includes information about the Earth's surface and its features, is a key component in geo-visualization.

6.1.1 Usage Overview

To access the Bhuvan Panchayat version 3 portal user has to access the **https://bhuvanpanchayat.nrsc.gov.in** using any web browser. Figure. 25 shows the homepage of the Bhuvan Panchayat portal
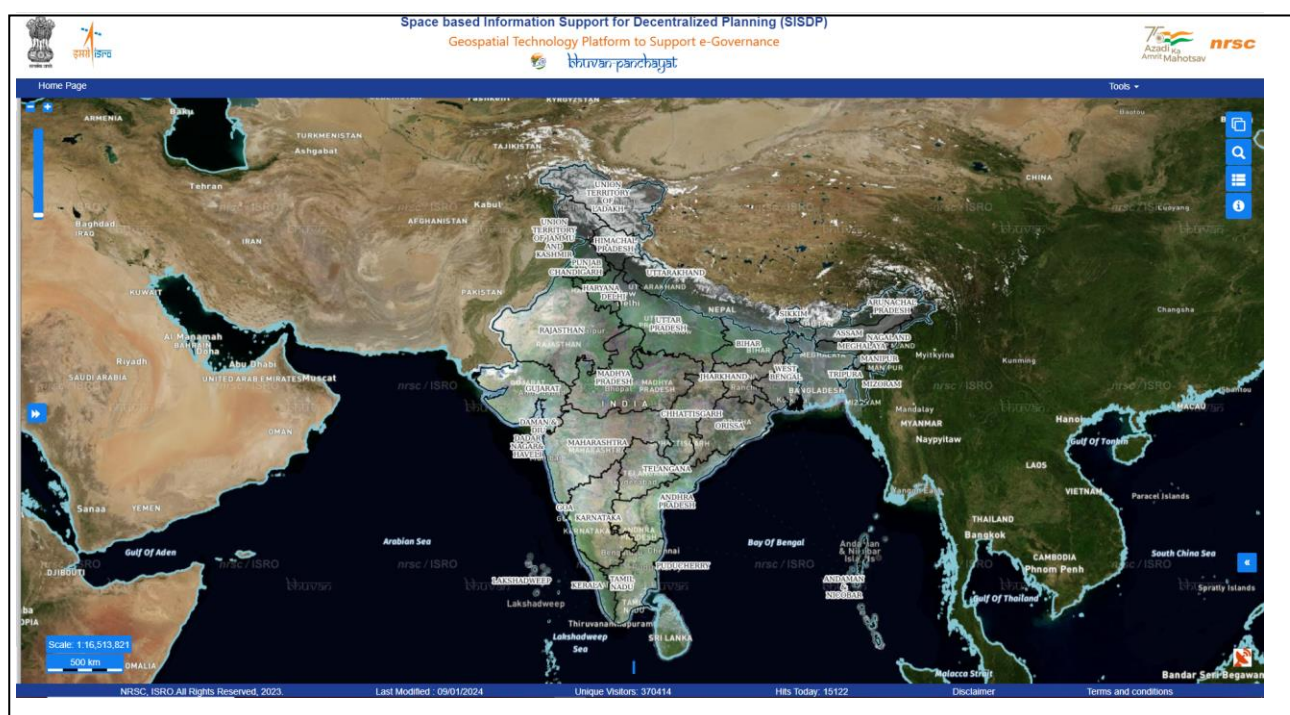
.

Figure 25. Bhuvan Panchayat 3.0 Homepage

Figure 25 shows the home page of portal. The portal is having four sections: Accordion, Map, Header and Footer. By default when portal is opened only three sections Map, Header and Footer get displayed. To access Accordion, user needs, to click on Accordion button as shown below Figure 26.
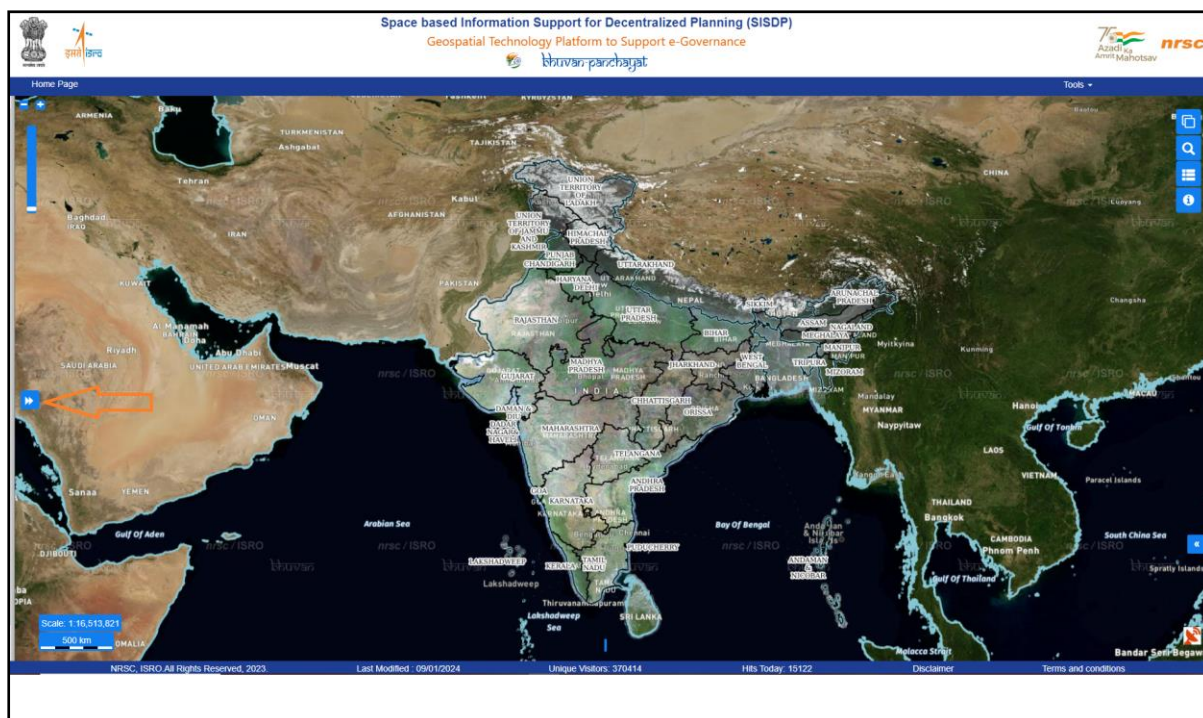
Figure 26. Accessing the Accordian

After accessing the Accordion button user can use various options available in it such as Area Selection, Geospatial Layers, FeatureInfo, Area Profile, Download profile report, Plan an Activity, Assets mapping and Visualization, Metadata, GPSDP, GPDI, Feedback, UserManual,Contact Us.

I.   Area Selection:

In Area Selection module, user can select the area of interest for which he/she wants to visualise the data. User has to select the State, District, Block & Panchayat and press submit, as shown in Figure 27.

Figure 27. Area Selection

For example:

    Select State: Assam
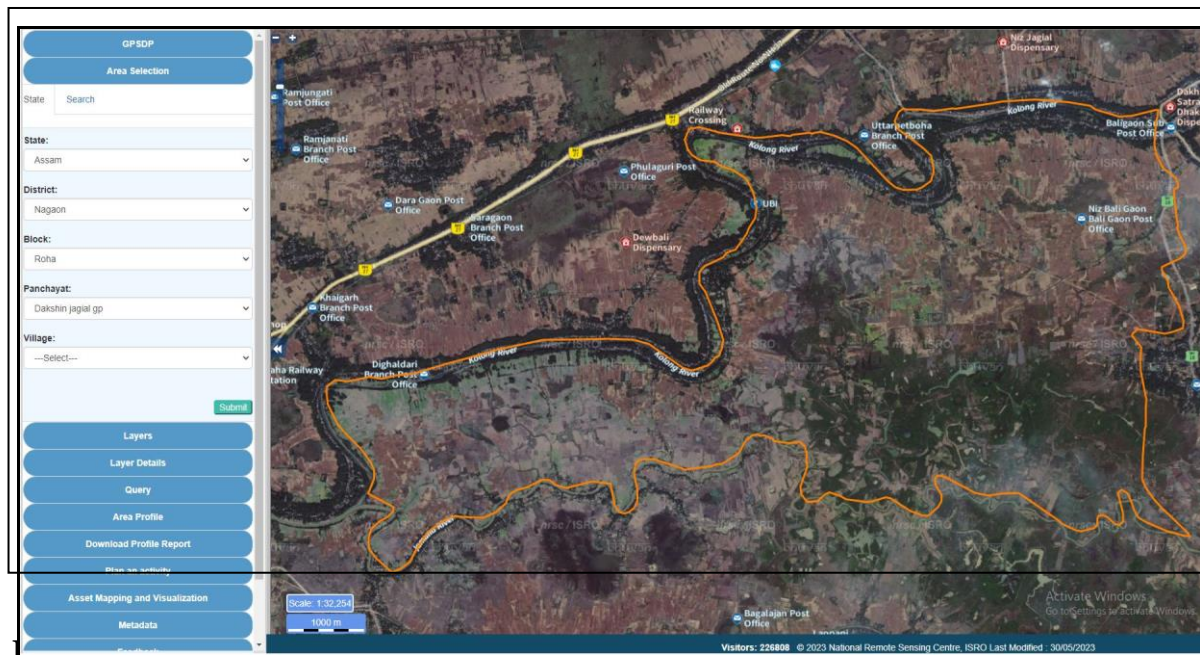   Select District: Nagaon
    Select Block: Roha
    Select Panchayat: DakshinJagial
    Click **Submit**

Press of Submit button process as the request and navigates to that particular area as shown in Figure 28.

II.   **Area selection using Search tool:**

Area selection can also be done using the search tool, where the user can provide location/area in the search toolbox. Place name matching to the input provided get populated as shown in Figure 29.

Figure 29. Area selection using search tool

For example:
-Select

Place: Assam

We can see the list of place; select the required
place.
Click **Submit**

To search other areas further, click **Clear** and proceed.

III. **Navigation Tools:**

For ease of using the portal, different tools has been developed and integrated onto the GIS viewer. Figure 30 A, B & C shows the zoom box, zoom in, zoom out tools of navigation toolbox.

Zoom Box will enable the user to zoom to a place with the help of rectangle drawn on the map and the result will cover only those places falling in the rectangle.
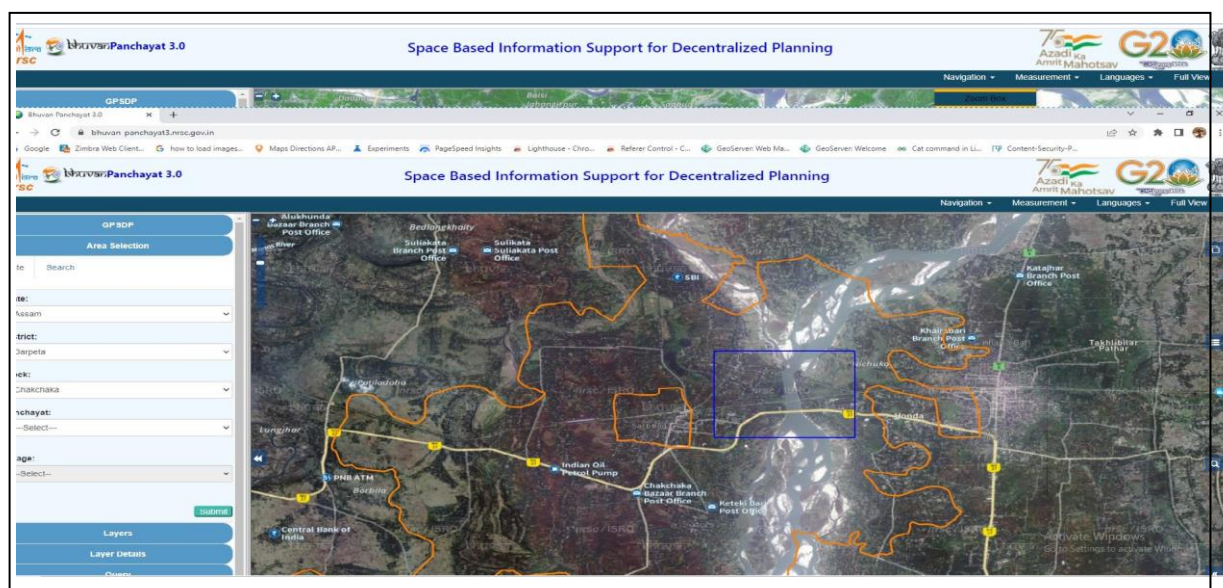
Figure 30 A . Zoom box tool

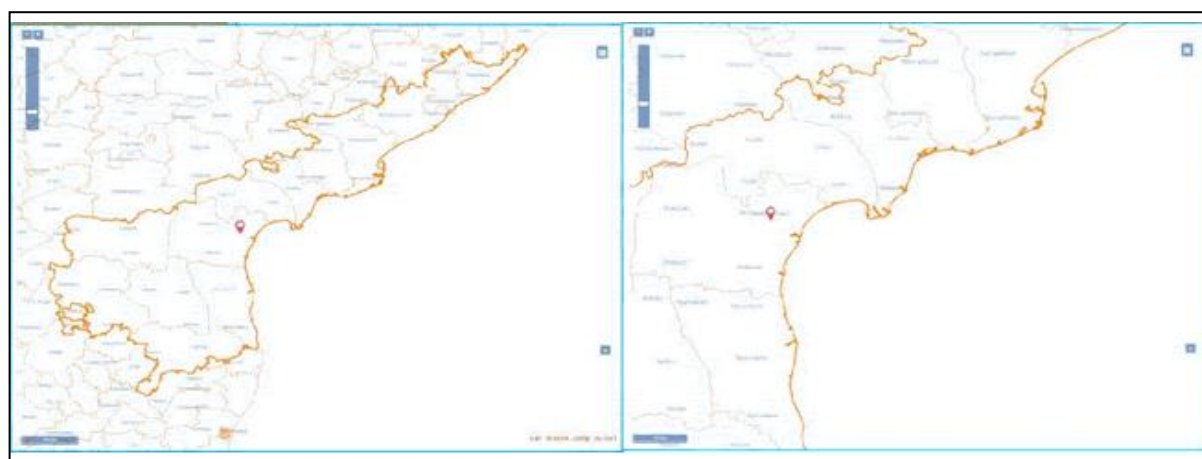Zoom In will enable the user to zoom in to one next zoom level (figure 30 B)

Figure 30 B . Zoom Out tool

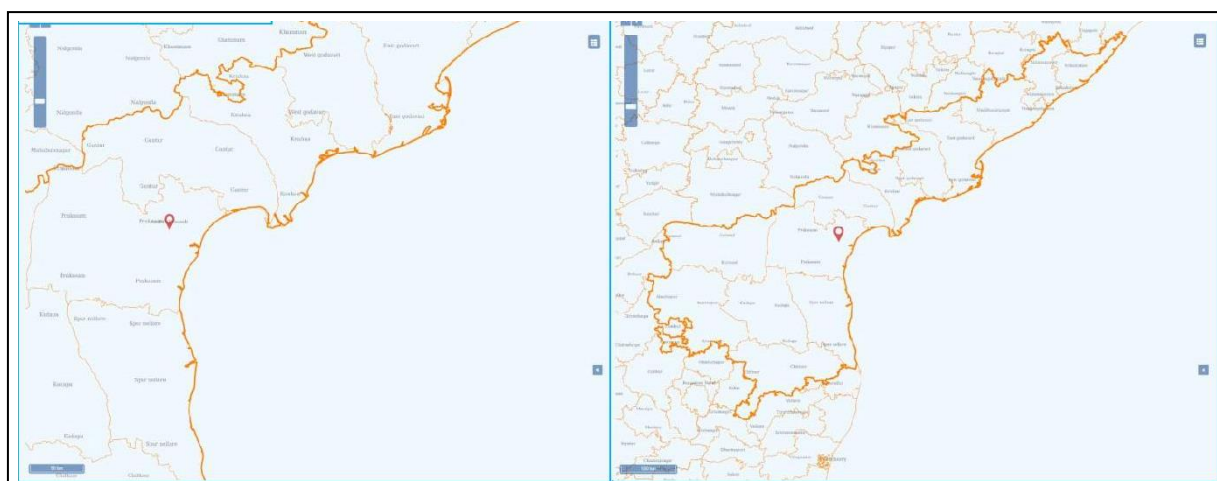Zoom Out will enable the user to zoom out to one previous zoom level (Figure 30 C).

Figure 30 C . Zoom Out tool

IV. Measurement Tools:

Measurement toolbox is incorporated to measure distance and area on the map as shown in Figure 31 A, B & C

Measure Length will enable the user to measure the length of a particular asset (e.g.road track) or a water body (e.g stream river) and give the result in metric units (figure 31A).
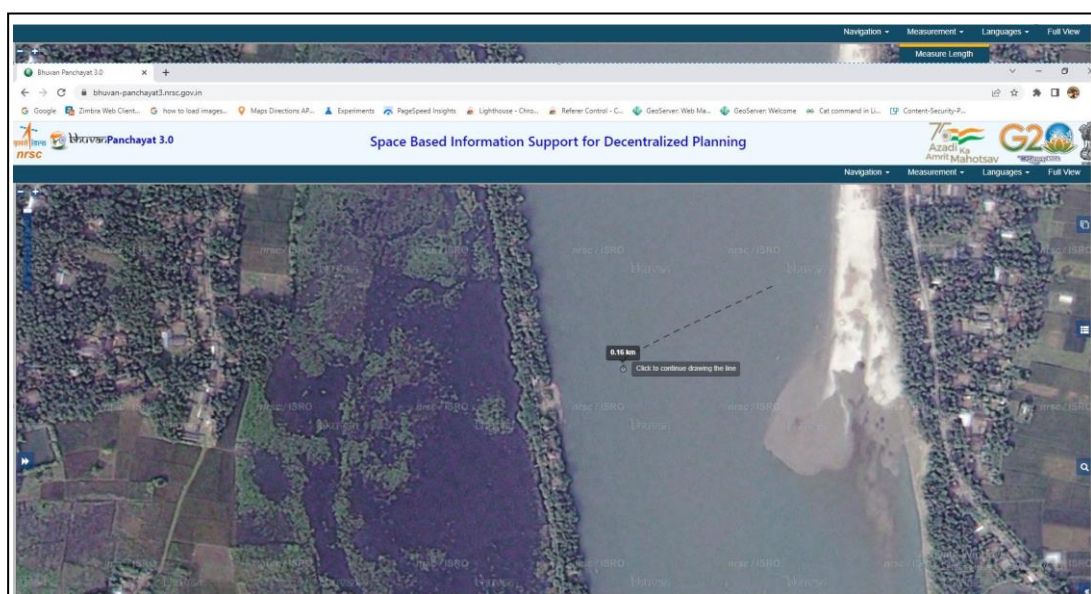

Figure 31 A . Distance tool

Measure Area will enable the user to measure the area of a particular polygon drawn on the map and give the result in metric units (Figure 31B).
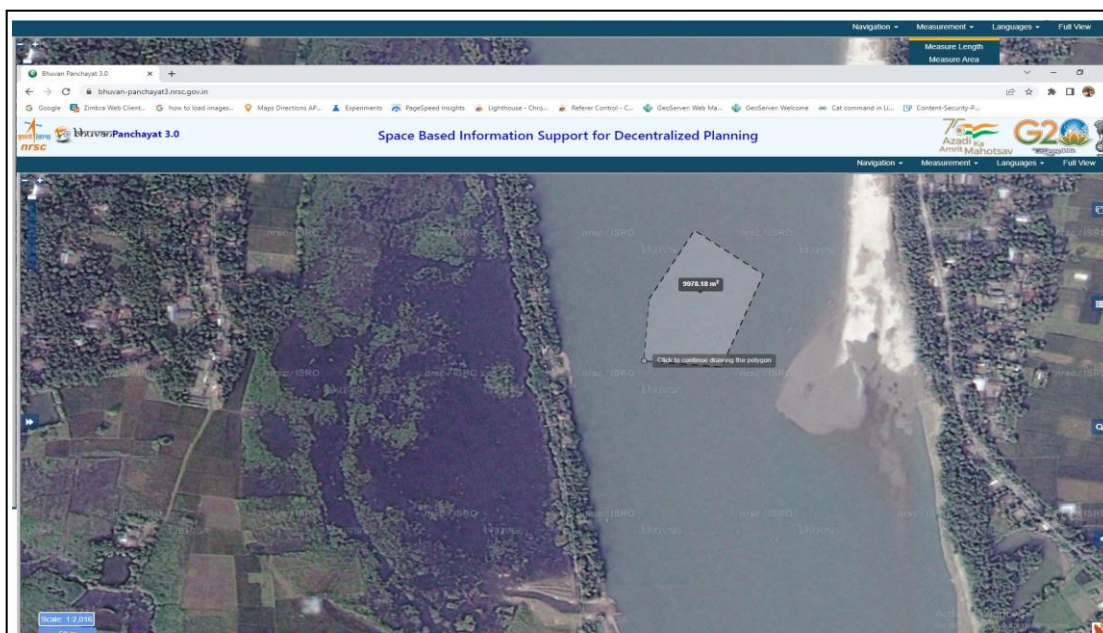

Figure 31 B : Measure Area tool

Clear will enable the user to clear on the map overlays and will render the map to its previous state (figure 31C).

Figure 31 C. Clear tool

V.   Languages:

User can select the language of his/her choice as shown in Figure 32, currently 8 language are supported. Languages option is available to enable the user to visualize the portal in the regional language.
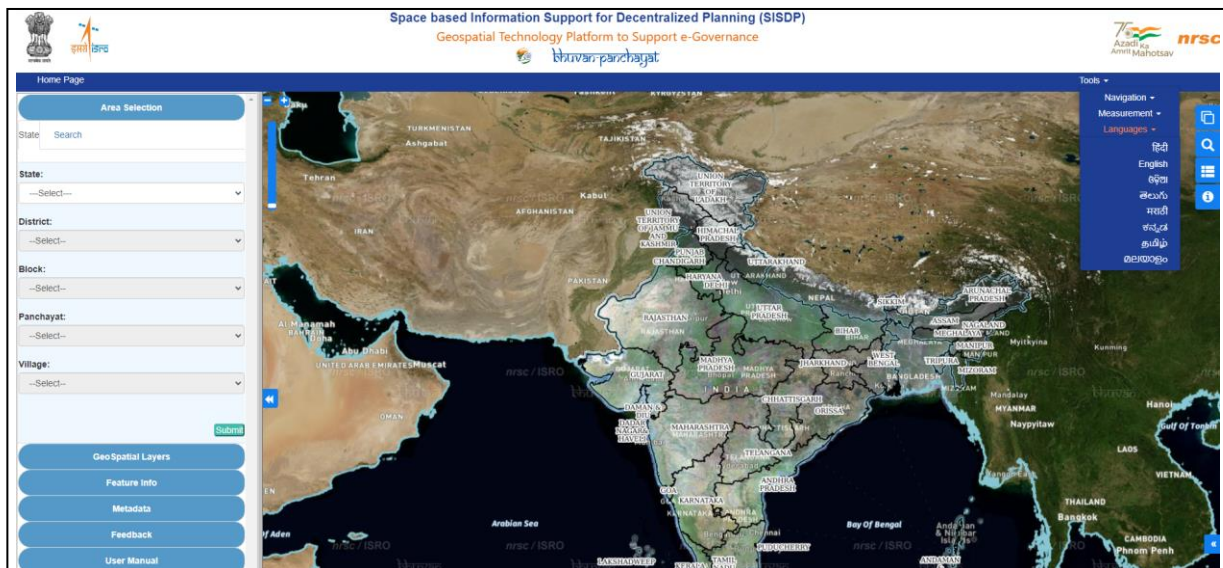
Figure 32. Language selection

6.1.2 Data Availability

This section presents a comprehensive overview of the diverse data offerings within the Bhuvan Panchayat portal:

i. **Satellite Imagery:**
   - Users can Visualize the area of their interest through high-resolution satellite imagery of different periods. MMI layers, encompassing both point data and base map data further enrich the available information.

ii. **Administrative Boundaries:**
   - Users have the flexibility to access data categorized by State, District, Block, Panchayat, and Village. Additionally, Cadastral maps for few select states are also accessible.

iii. **Constituencies:**
   - In the constituencies section, users can explore layers representing both assembly and parliament constituencies.

iv. **Infrastructure:**
   - The infrastructure category provides access to road and rail data from SISDP Phase I and II Projects

v. **Hydrology:**
   - Users interested in hydrological data can access information related to watersheds and microwatersheds.

vi. **Thematic Layers:**
   - This section offers access to thematic layers, including LULC (Land Use/Land Cover), Slope, Settlement, Drainage, and rivers data available for SISDP Phase I and II Projects.

vii. **Assets:**
   - The Assets section enables users to access information on amenities in select Gram Panchayat spanning across the country.

viii. **Profile:**
   - In the Profile section, users can explore profiles such as Gram Panchayat and regional profiles.

This comprehensive array of data (figure 33) ensures that users can explore and analyze information on ranging multiple themes (LULC, hydrology, infrastructure, drainage etc.,) along with administrative divisions to assets and area specific profiles, providing a holistic understanding of the region and its characteristics.
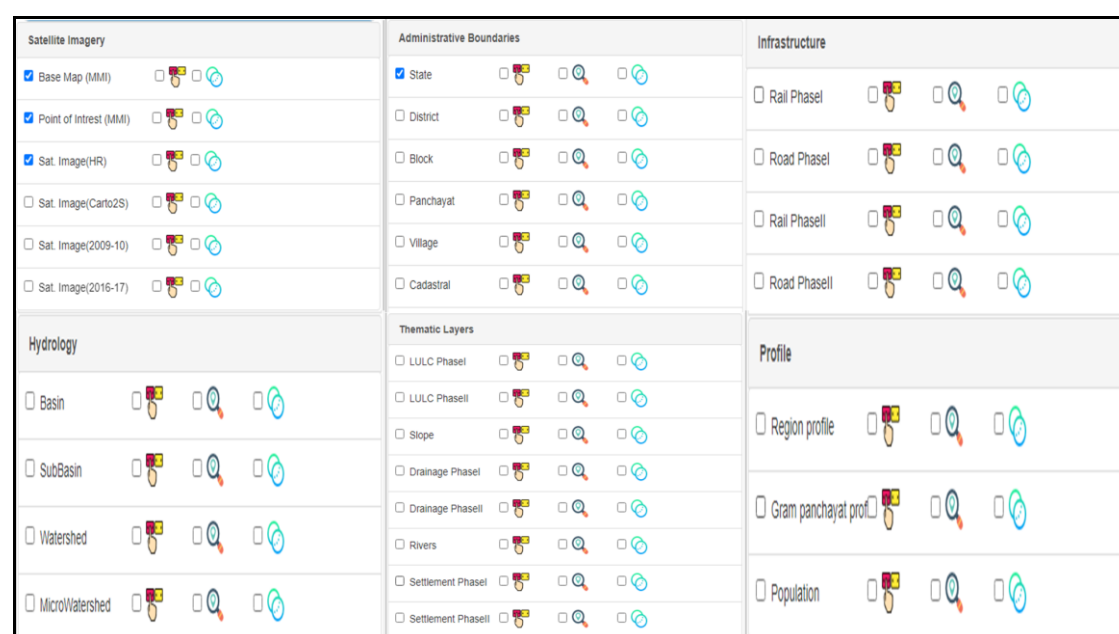
Figure 33. Data availability in Bhuvan Panchayat Portal

6.2 Tools and Utilities

6.2.1 Layer Widget

Provision to add and integrate different base layers on the map viewer is available. Figure 34 shows enabling and overlaying of different layers of the selected area.

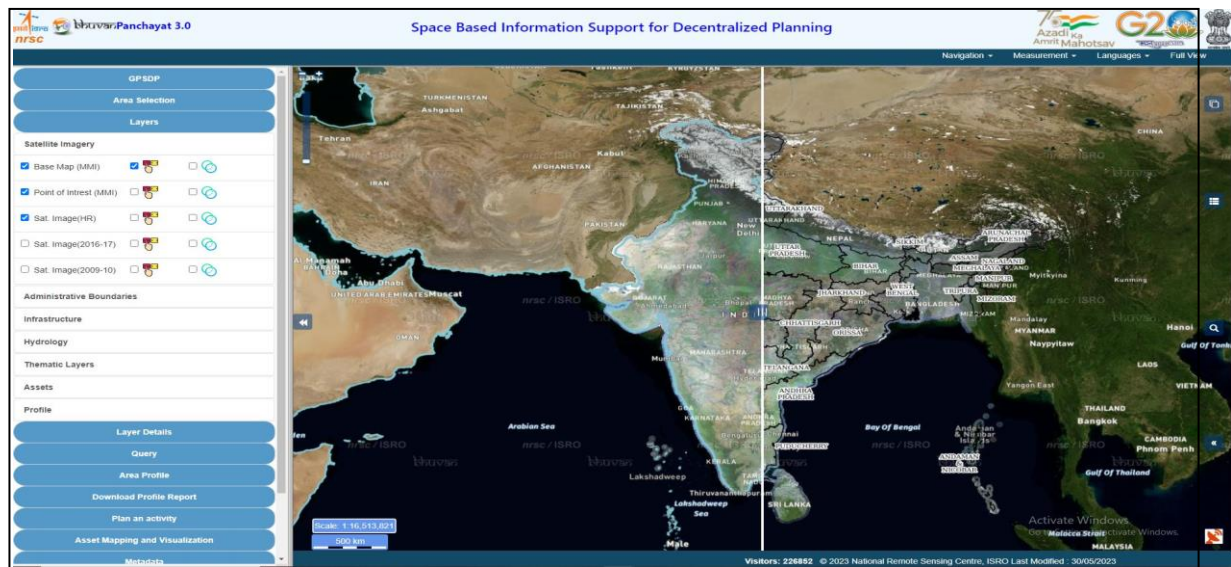**I.** In Layers, enable Satellite Imagery layer (figure 34).

Figure 34. Multiple layers of an area in the map viewer

II. In Layers, enable all Administrative boundaries: Figure 35 shows enabling admin layers.
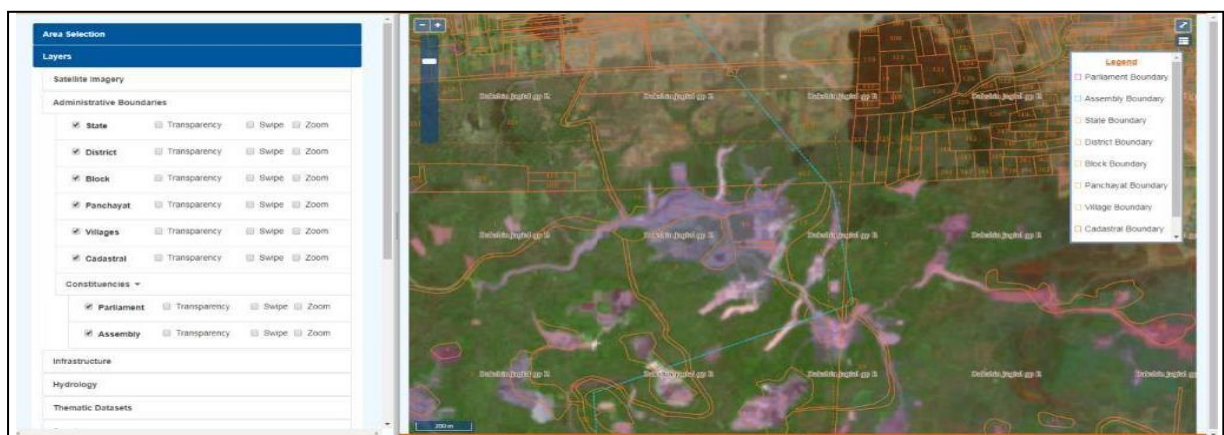

Figure 35. Administrative layers in the map viewer

- After enabling click on the ⊞ top right corner of the screen for the legend of the enabled layers.

Note: Click Refresh button 🔄 on the legend column on enable of each and every new layer.

III. In Layers, enable all Infrastructure layers: Figure 35 A , B & C show infrastructure layers.
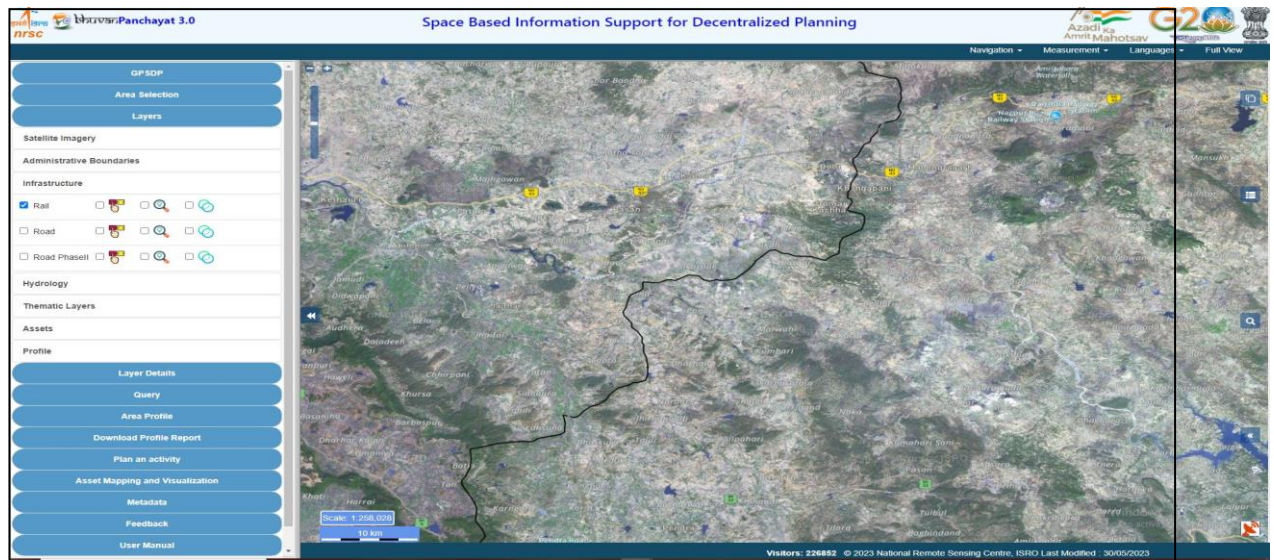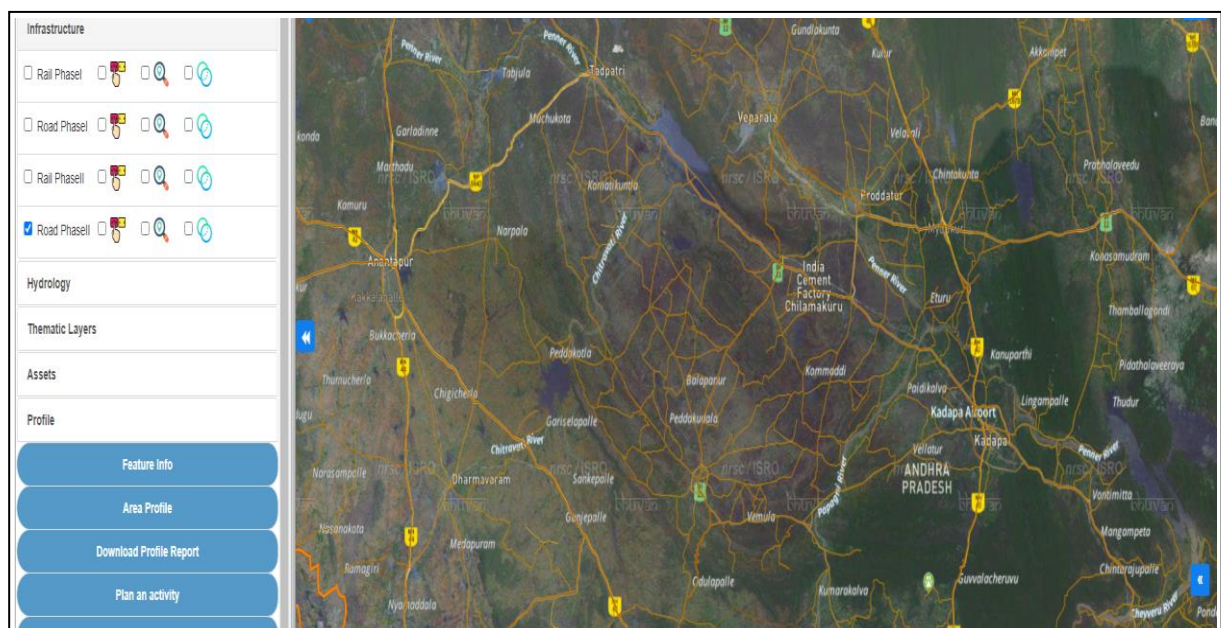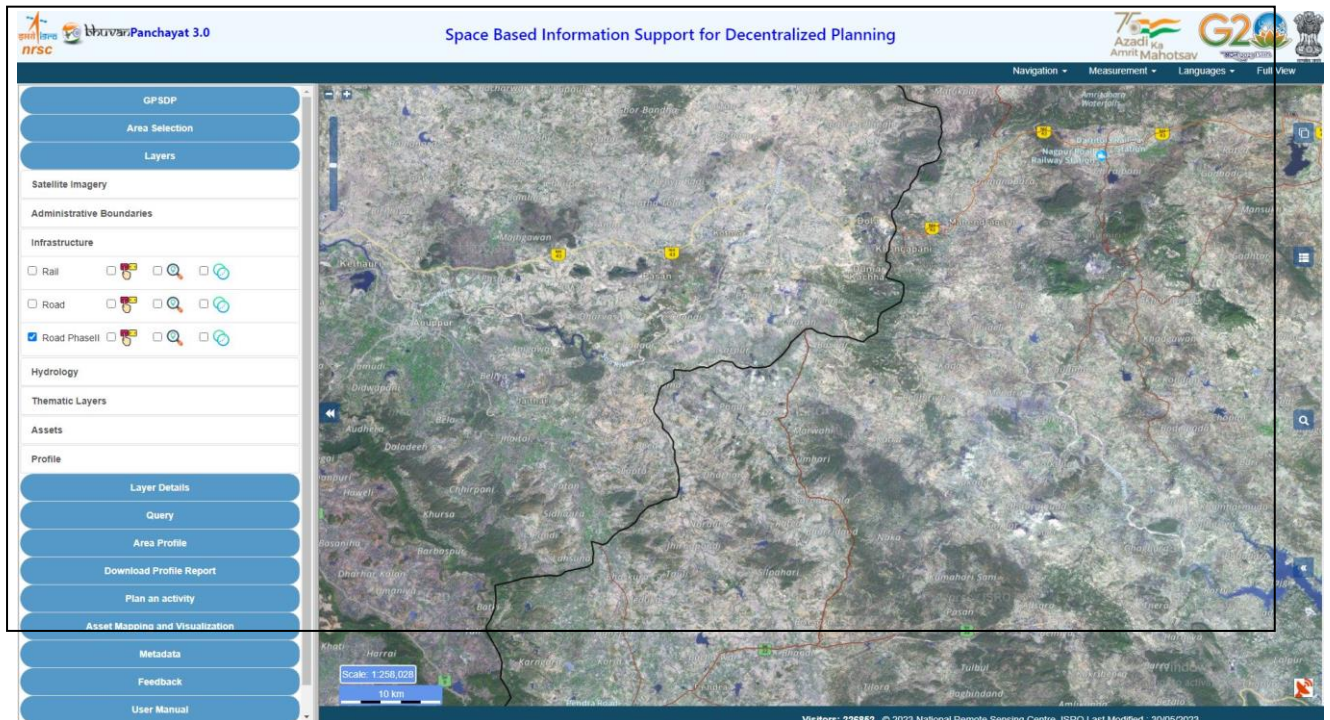

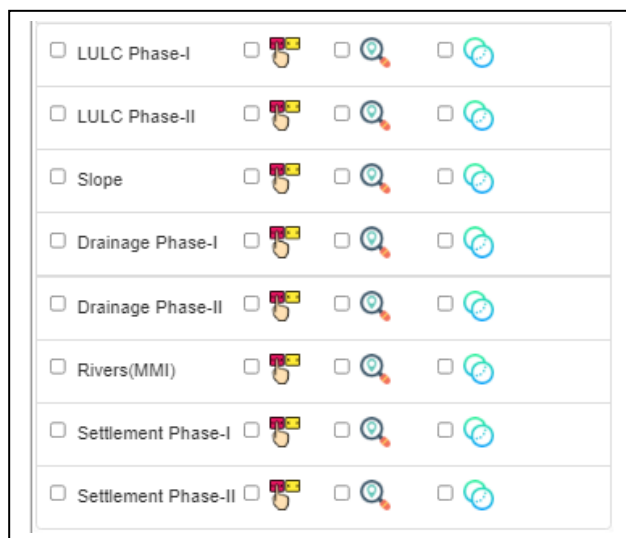Figure 36 A. Infrastructure layers in the map viewer

Figure 36 B. Infrastructure layers (Rail/Road) in the map viewer

IV. In Layers, go to thematic layers:

    a) LULC: LULC layers can be enabled on to map viewer as shown in Figure 37 and Figure 38.

      Enable LULC layer in Thematic Layers.

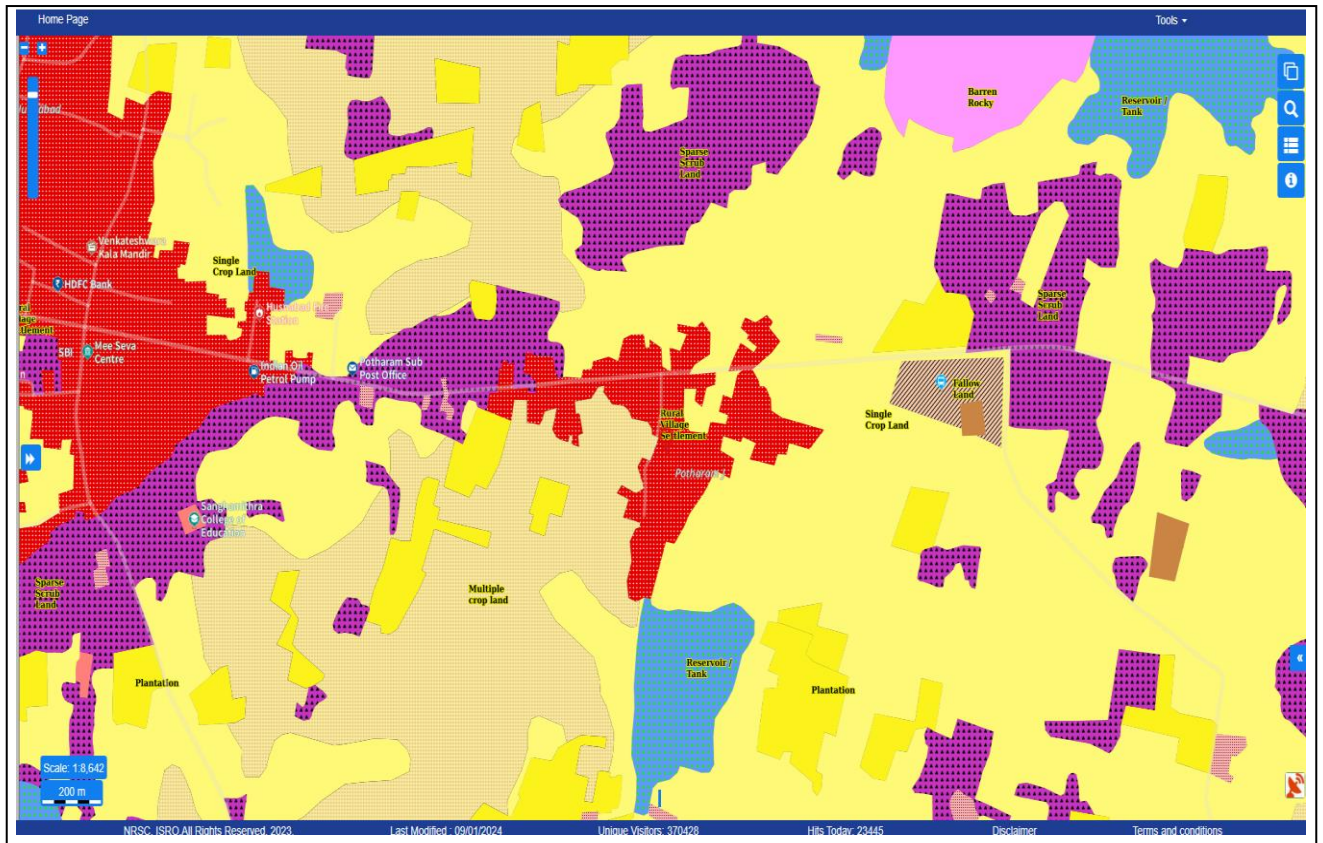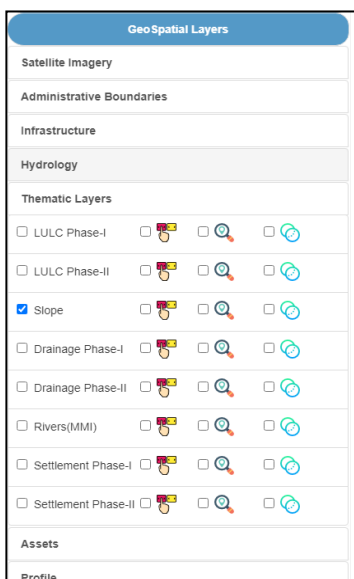**Figure 37. Selection of LULC layer for overlaying**

Figure 38. Overlaying of LULC Phase-II data in the map viewer

b) SLOPE: Slope layer can be overlaid in the map viewer as shown in Figure 39 and Figure 40.

Enable SLOPE layer in Thematic Layers
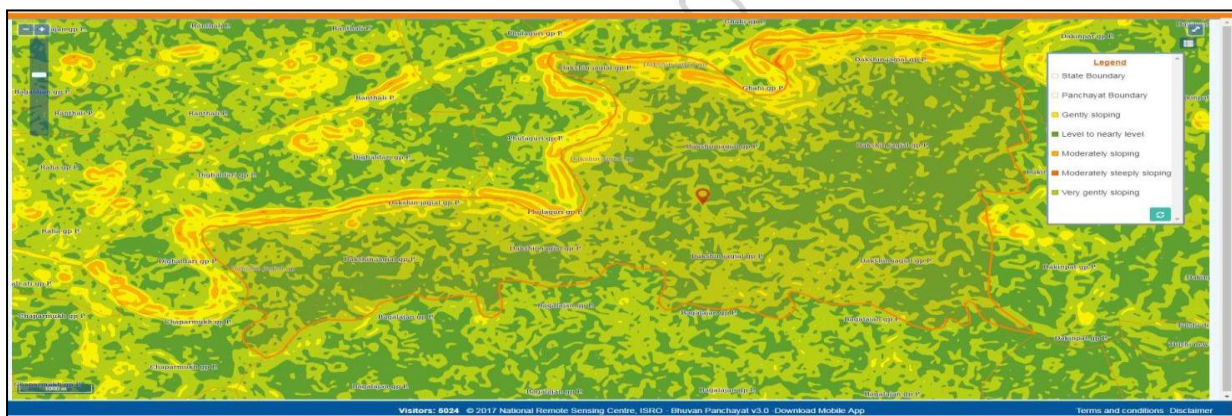
Figure 39. Selection of LULC layer

Figure 40. Overlaying of Slope layer in the map viewer

c) DRAINAGE: Drainage layer can be overlaid in the map viewer as shown in Figure 41 and Figure 42.
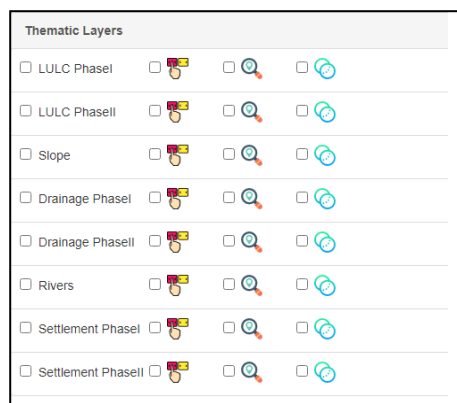
- Enable DRAINAGE layer in Thematic Layers.

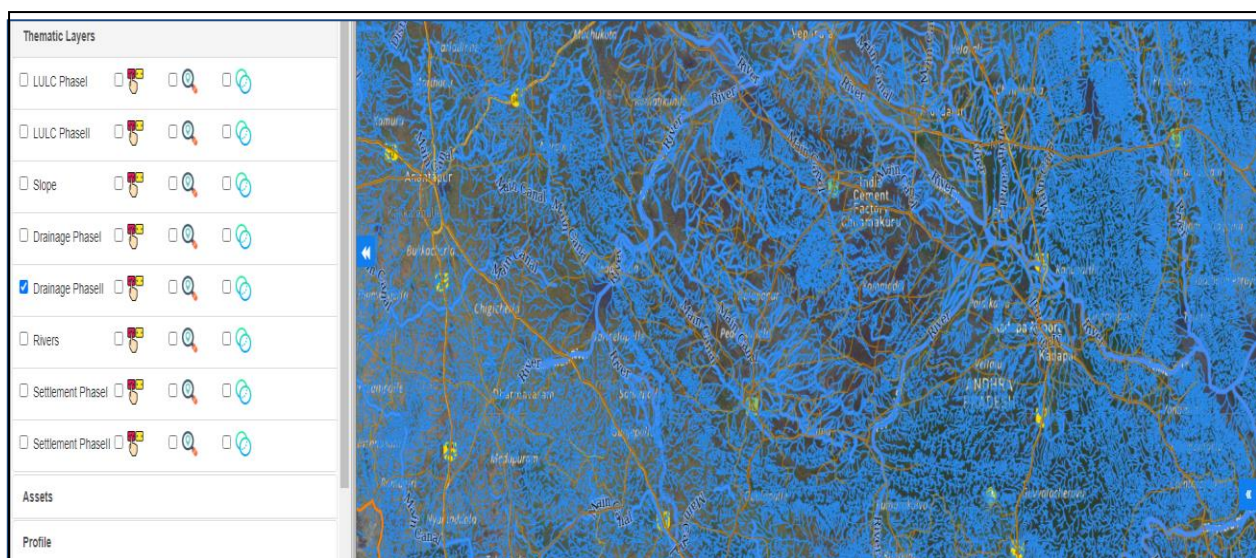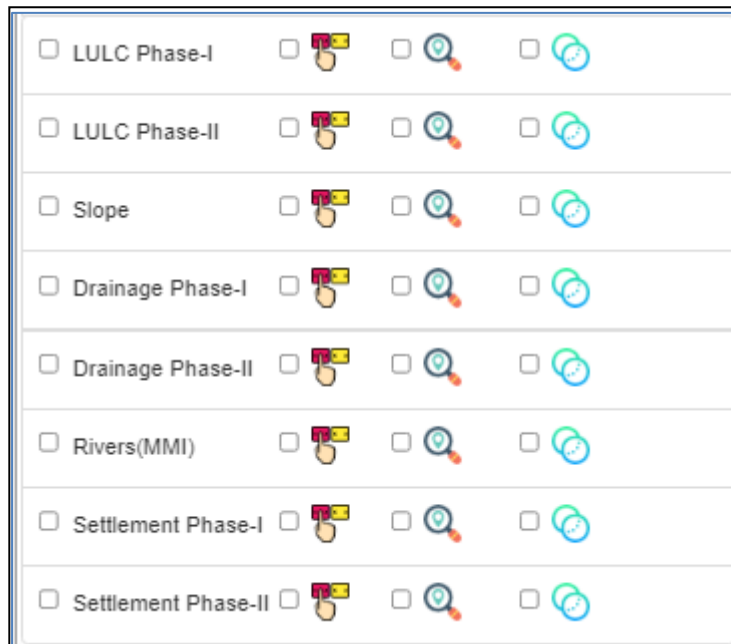Figure 41. Selection of LULC layer

Figure 42. Overlaying of Drainage layers in the map viewer

d) SETTLEMENT: Settlements layer can be overlaid in the map viewer as shown in Figure 43 and Figure 44.

Enable SETTLEMENT layer in Thematic Layer

Figure 43. Enabling Settlement layer
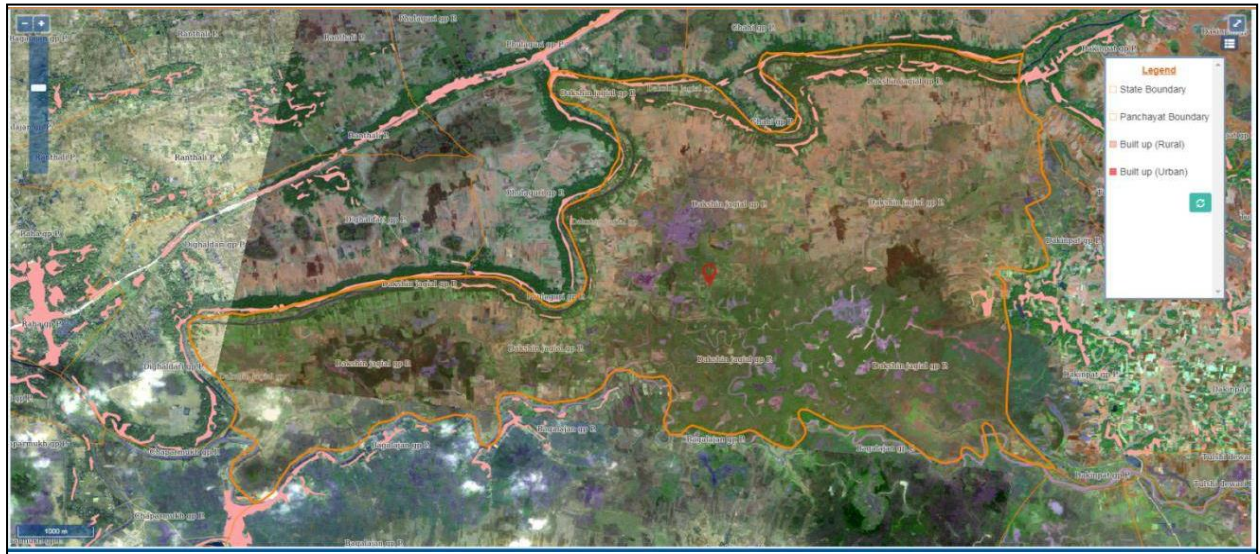
Figure 44. Overlaying of Settlements layer in the map viewer

V. ASSETS: In Layers, enable all Assets layers Figure 45 shows all assets layers in the map viewer.
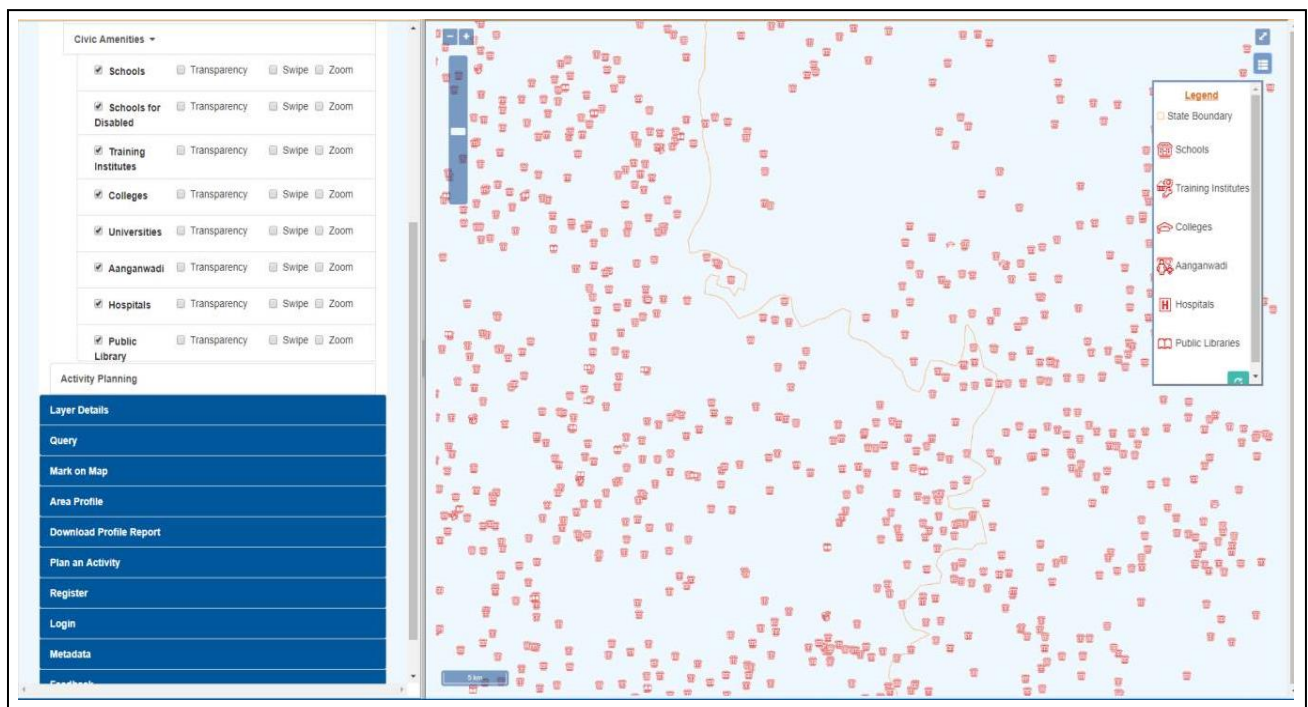

Figure 45.A, Overlaying of all Assets layers in the map

6.2.2 Swipe/Transparency/Zoom Out

In this section, we will discuss about Swipe/Transparency/Zoom Out functionalities (Figure 45).

1. Swipe:
  - The Swipe functionality in geospatial applications allows users to interactively compare two different layers or time periods. By swiping across the screen, users can reveal or hide specific layers, enabling a side-by-side visual comparison. This feature is particularly useful for identifying changes in land cover, infrastructure development, or any other spatial variations.

2. Transparency:
  - Transparency, in the context of geospatial data visualization, refers to the degree to which underlying map layers are visible. Users can adjust the transparency of a layer to overlay it on top of another while maintaining visibility of both. This feature is beneficial for analyzing spatial relationships, as it allows users to see how different layers interact without completely obscuring one another.

3. Zoom Out:
  - Zooming out is a fundamental navigation feature in geospatial applications. It allows users to view a broader area on the map, providing context and a more comprehensive understanding of the spatial layout. Zooming out is particularly valuable when users need to explore relationships and patterns across larger geographic extents.

In summary, these functionalities enhance the user experience and analytical capabilities in geospatial data visualization. Swipe facilitates direct visual comparisons, transparency enables the simultaneous display of multiple layers, and zooming out provides a broader perspective for a more holistic understanding of spatial data. These features empower users to extract meaningful insights from complex geospatial information.
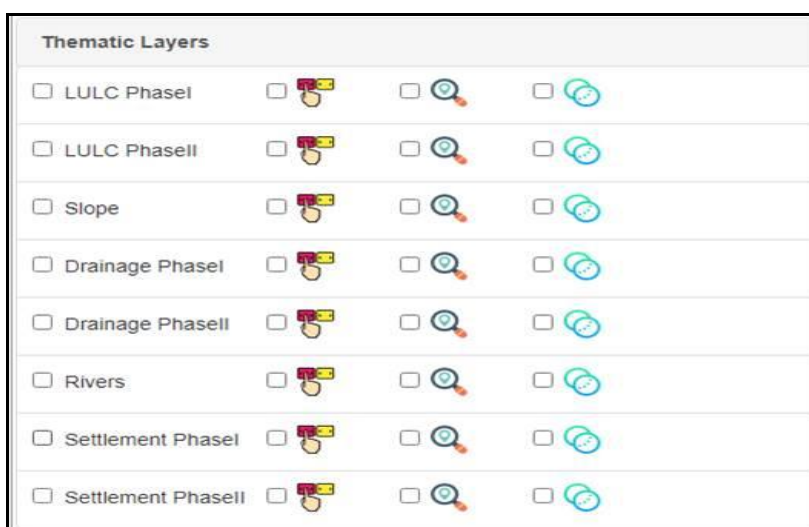

Figure 45.B, Swipe/Transparency/Zoom Out functionalities

6.2.3 Search Widget

This search option works same as "Search" option discussed earlier. Once the portal is opened, user can directly go to "Search" option and make use of it as shown in Figure 46.
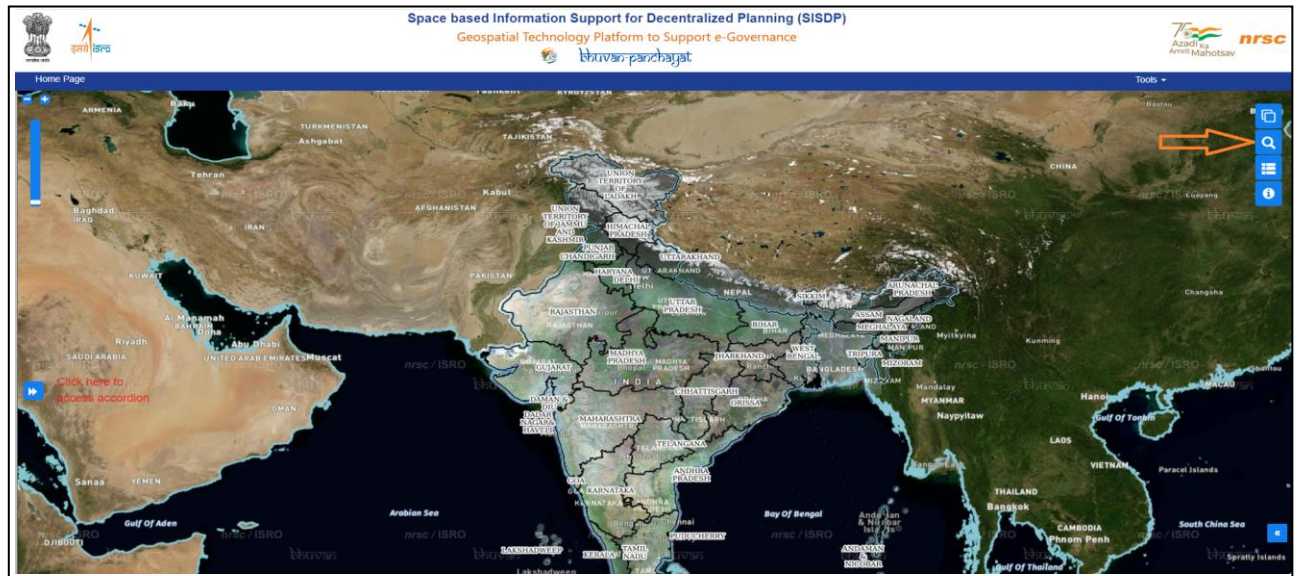

Figure 46. Search widget

6.2.4 Scale

Located at the bottom left side of the interface, this option provides users with the current scale of view. It serves as a useful reference point, allowing users to understand the level of detail and zoom level of their current view as shown in Figure 47.
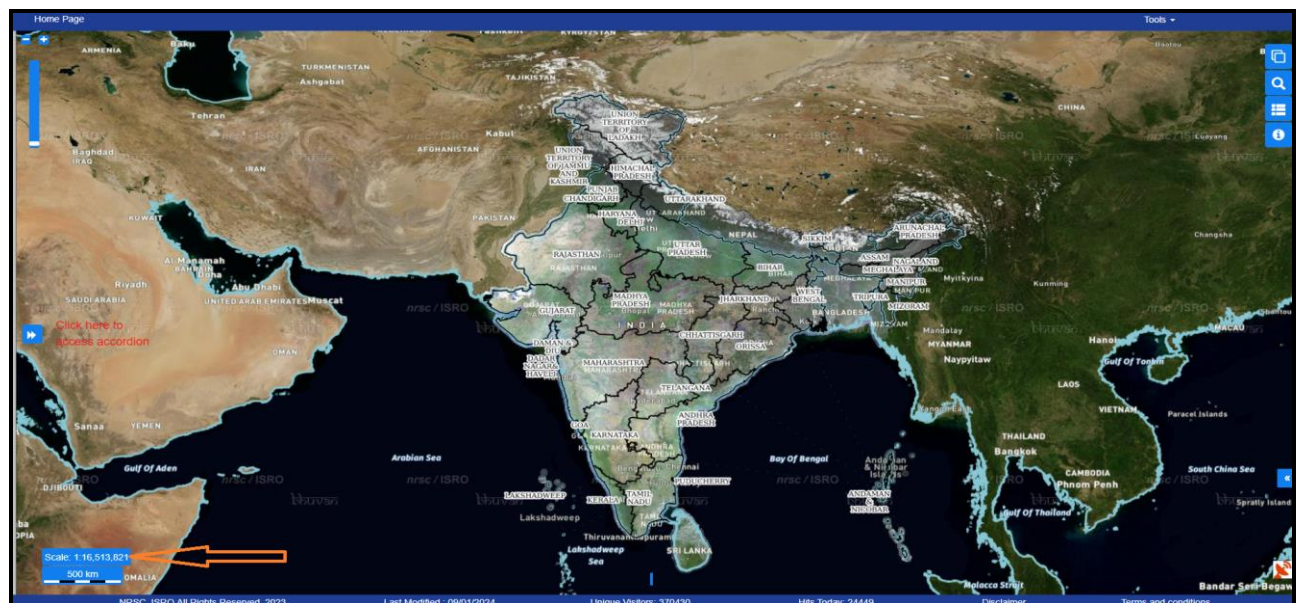

Figure 47. Scale

6.2.5 Scale Bar

The scale bar in the map viewer provides a visual representation of distance or scale. It helps users accurately estimate distances on the map or spatial display, aiding in understanding the relative scale of features as shown in Figure 48.
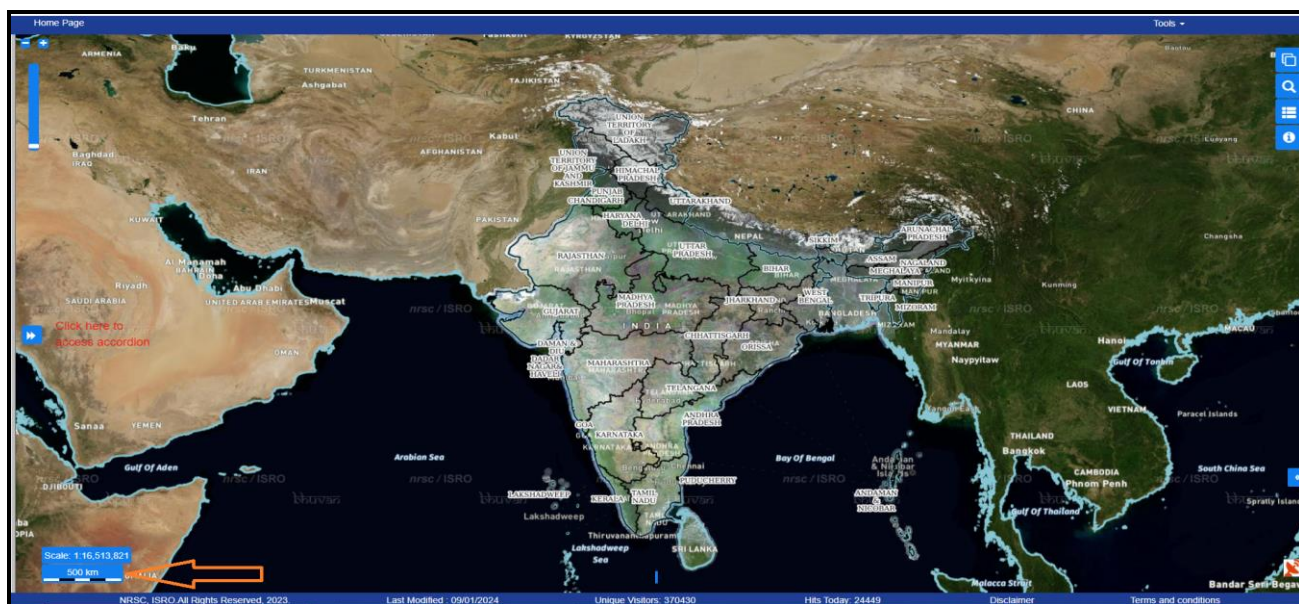

Figure 48. Scale bar

6.3 Advanced Tools

6.3.1 Layers Widget

Introducing a new option that significantly improves user accessibility of portal. When selecting this option, users gain access to Base layers comprising satellite data and MMI data. Furthermore, users can interact with administrative boundaries to view different boundary types. Moving beyond Base layers and Administrative boundaries, users can delve into Thematic layers, which provide valuable insights into land use and land cover (LULC), slope, drainage, and other relevant information. Lastly, the infrastructure option enables users to visualize road and rail networks specific to SISDP data as shown in Figure 49.

Figure 49. Layers widget

6.3.2 Feature Info

Click on the map at any point on the map

User will be able to get all the layer details as shown in Figure 50.

Figure 50. Feature Info

6.3.3 Legend

The legend tells a map reader the meaning of the symbols used to represent features on the map. Legends consist of examples of the symbols on the map with labels containing explanatory text.

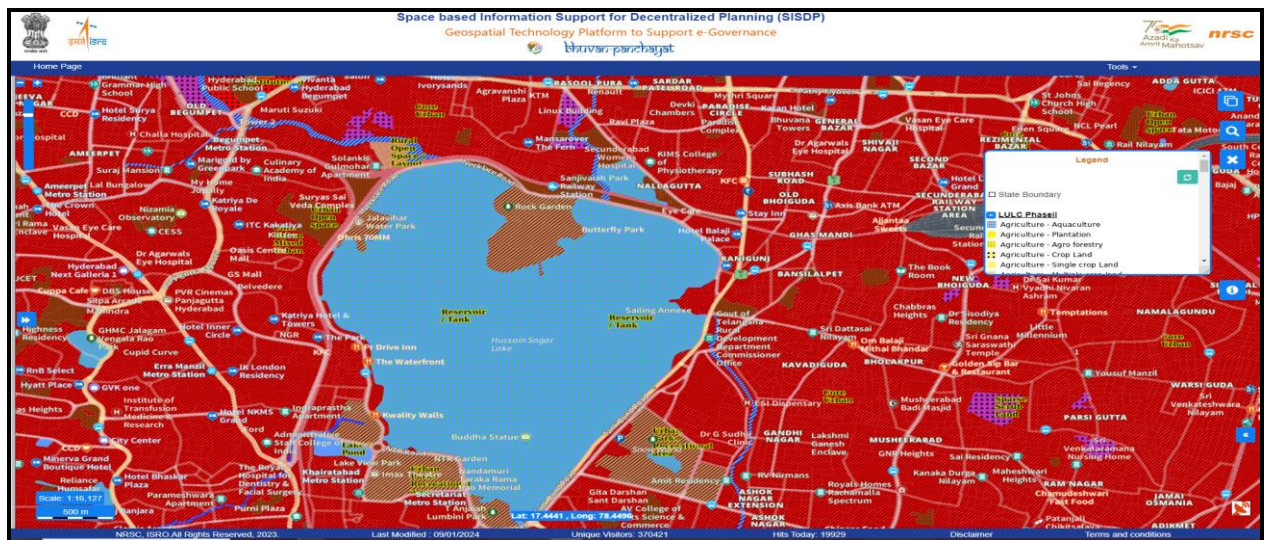Display of LULC-Phase-II legend is demonstrated in figure 51.

Figure 51. LULC Phase-II legend

6.4 Others

In this section, we discuss about Metadata, Feedback and Contact Us.
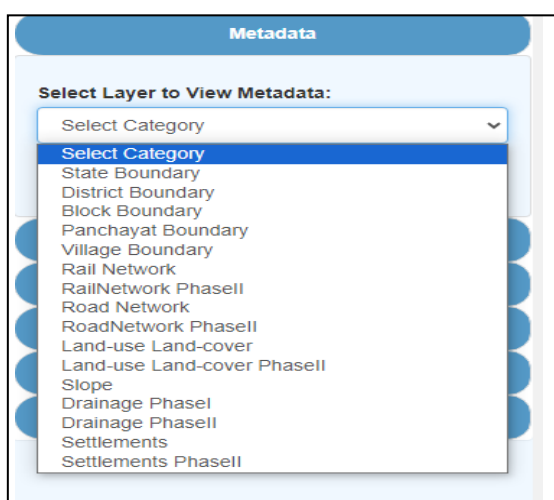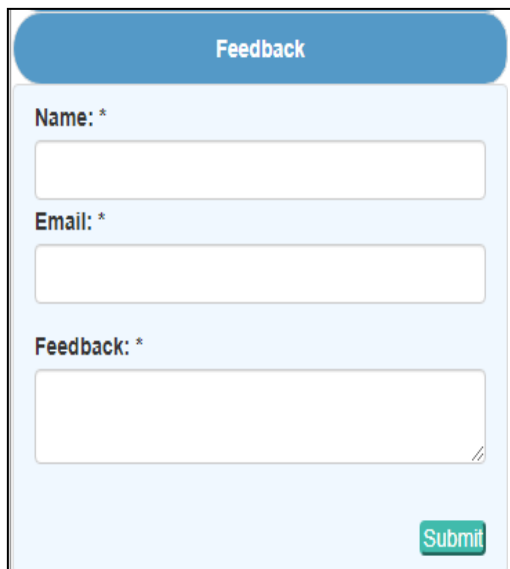
6.4.1 Metadata

Go to **Metadata module**.

- Select **Layer to view Metadata**, as shown in Figure 52.
- Select Land use Land cover Phase II .
- Metadata will be visible as shown in Figure 53.

Figure 52. Viewing the metadata

S.N	Field	Value
1	Title	LULC Phase-II
2	Satellite Data Used	Fused NCC (Cartosat 1 + LISS 4)
3	Satellite Data Year	2018-2023
4	Satellite Data Resolution	2.5m
5	Projection	Geographic Coordinate System (GCS)
6	Datum	WGS84
7	Scale	1:10,000
8	Year of Mapping	2018-2023
9	Source	Land Cover Database on 1:10,000 scale, SISDP Project, National Remote Sensing Centre, ISRO, Hyderabad
10	Corporate Name & Address	NRSC, Balanagar, Hyderabad
11	Purpose of mapping	To support the Panchayat Level Planning and Governance in India
12	Individual name	Dr. S.K. Srivastav
13	Organisation name	NRSC
14	Position name	Project Director
15	Address	RRSC, NRSC ISRO, Hyderabad, Telangana-500037,India
16	Level of Classification	4
17	Classes	Level 1 with 7 classes,Level 2 with 27 classes,Level 3 with 41 classes,Level 4 with 89 classes
18	Geometry type	Polygon
19	Key words	10k, Bhuvan-Panchayat, Land Cover, SIS-DP, NRSC,ISRO

Select Layer to View Metadata:

Land-use Land-cover PhaseII

Figure 53. Metadata of LULC (Phase –II) layer

6.4.2 Feedback

Go to **Feedback module.**

Figure 54. Feedback module

- Fill all the required fields to leave the feedback.

- Personalization option is also given for better understanding of the mentioned feedback

- Click **Submit**, as shown in the Figure 54.

Figure 55. Contract us